

to some public Prison if the Regiment or Corps to which he is suspected to belong shall not be in such Part, or if the Regiment or Corps be in such Part, the Justice may deliver him into Custody at the nearest Military Post if within reasonable Distance although the Regiment to which such Person is suspected to belong may not be stationed at such Military Post; and such Justice shall in every Case transmit to the General or other Officer Commanding a Descriptive Return in the Form prescribed in the Schedule to this Act annexed, to the end that such Person may be removed by Order of such Officer and proceeded against according to Law; and such Descriptive Return, purporting to be duly made and subscribed

in accordance with the Act, shall, in the Absence of Proof to the contrary, be deemed sufficient Evidence of the Facts and Matters therein stated: Provided always, that any such Person so committed as a Deserter in any Part of Her Majesty's Dominions shall, subject to the Provisions herein-after contained, be liable to be transferred by Order of the General or other Officer Commanding to serve in any Regiment or Corps or Depot nearest to the Place where he shall have been apprehended, or to any other Regiment or Corps to which Her Majesty may deem it desirable that he should be transferred, and shall also be liable, after such Transfer of Service, to be tried and punished as a Deserter.



# SUPPLEMENT TO The Calcutta Gazette.

WEDNESDAY, FEBRUARY 15, 1865.

## OFFICIAL PAPERS.

A SUPPLEMENT to the GAZETTE will henceforward be published, containing such Official Papers and Information as the Government of Bengal may deem to be of interest to the Public, and such as may usefully be made known.

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No Official Orders or Notifications, the publication of which in the GAZETTE is required by Law, or which it has been customary to publish in the GAZETTE, will be included in the SUPPLEMENT. For such Orders and Notifications the body of the GAZETTE must be looked to as heretofore.

### Further Measures taken for checking the progress of Epidemic Cholera in the Districts of 24-Pergun- nahs and Midnapore.

From D. J. McNALLY, Esq., Joint Magistrate, on Special Duty, to the Secretary to the Government of Bengal.—(No. 48, dated the 24th January 1865.)

I HAVE the honor to inform you, in continuation of my Report No. 40 of the 14th instant, that on Thursday last, the 19th instant, I again left Calcutta, taking with me a fresh stock of medicines and five more Native Doctors, who constituted a sufficient reinforcement to the previously employed staff.

2. Having heard from the Magistrate of Howrah that cholera was prevalent near Oolooberiah I landed at that place. I found no cholera nor any unusual sickness at Oolooberiah itself, but was informed that there was much cholera at and south of Chandepore, between Oolooberiah and Mysrakha Ghaut. I accordingly sent a Doctor and medicines to that neighbourhood.

3. I then proceeded to Tumlook, and received from Dr. Bow the Report of which a copy is enclosed. It will be seen from that Report that the only places in the Tumlook Sub-Division where special medical aid was still required were Mysadul and Seetulpore, where cholera seemed to have revived since Dr. Bow's arrival. He had already transferred, as prospectively alluded to in paragraph 6 of my last Report, two of his subordinates to the southern bank of the Huldee River, and had besides just ascertained by personal inquiry that the report (also alluded to in the same paragraph of my letter) of great sickness on the lower bank of the Hoopnaraain was true in respect to the neighbourhood of Qasmanpore, a few miles below Kali Ghaut.

4. Dr. Bow having under his orders the six men mentioned in my former letter, and a seventh who had subsequently joined his staff from Calcutta, we have been able to re-distribute them as follows:—

Mysadul and Seetulpore	...	1
South bank of Huldee	...	2
North bank of Hoopnaraain	...	1

leaving two, whose services are urgently required by the Medical Department elsewhere, for discharge from their present employment. These two will be immediately dispatched to Calcutta.

5. Dr. Bow will now undertake the supervision of the country to a distance of some miles south of the Huldee River, as well as of Mysadul.

6. In the Howrah District there are now in all three special Doctors, all employed between the Midnapore Road and the Hoopnaraain River, viz. two just sent there, and one (not two as supposed in the 9th paragraph of my former letter) previously deputed by the Medical Department. For the submission of Returns, &c., by these men, and for their future supply with medicines, I have arranged with the Magistrate of Howrah, as it will be impossible for me to visit them personally so long as my presence is specially needed in Hidgeliee.

7. From Tumlock I went to Diamond Harbour. Here I found that the Doctor sent ten days before to Sultanpore had treated several cases of cholera during the first three days he was there, but the disease seemed to have subsequently disappeared. I directed him to be sent at once to Barripore with reference to the instructions contained in Mr. Junior Secretary Bayley's letter No. 80 of the 7th instant, which was only received by me on the 15th instant. Medicines have been left with the Deputy Magistrate at Diamond Harbour for transmission to Barripore and for the use of the one remaining special Doctor under his orders, who has hitherto been employed at Sarsia and Daspore, and whom I have now left with the

Deputy Magistrate to be sent wherever his services may be most required. The course of the cholera is so uncertain and capricious that only an Officer on the spot can usefully direct the movements of Medical Subordinates from day to day. Reports will be regularly sent to me to Contai from both Diamond Harbour and Barriopore.

8. The Deputy Magistrate of Barriopore has been requested by me to send back to Calcutta the Doctor now deputed to Barriopore as soon as his services can be dispensed with, as this man is also urgently required by the Medical Department for another appointment.

9. I arrived at this place yesterday, the 23rd instant, and have received the enclosed Report from Dr. Switzer, from which it will be seen that during the first three days after his arrival he distributed 500 cholera pills and other medicines to the people of this and the neighbouring villages. He then went on a circuit of inspection to the northward and westward, and his observations led him to conclude that the disease was gradually leaving the northern part of the Sub-Division and spreading rather to the southward. He came in again to Contai to meet me, and is now about to start immediately in a south-westernly direction, taking with him the four fresh Doctors whom I have brought down. There is still sufficient illness to the north to require the continued employment, at their present posts, of the men sent out in that direction.

10. Two tracts of country in addition to that which Dr. Switzer is now about to visit remain to be explored. One lies to the north of the Russolpore River and east of the Contai and Tumlock Road. This tract I have requested Dr. Bow to take up at once. The other lies to the westward of Nuggwan towards the Midnapore and Jellasore Road. This I intended to traverse myself after having quickly visited the Stations to the northward and having met Dr. Bow, as I hope to do to-morrow evening, at Hurriah, on the Tumlock Road.

11. Our subsequent proceedings will be duly reported.

From J. C. Bow, Esq., M. D., Surgeon, on Special Duty, to  
D. J. McNutt, Esq., Joint Magistrate, on Special  
Duty, —(dated the 20th January 1865.)

In continuation of my letter of the 18th instant, I have the honor to report—

1. *Mundleghat, west of the Roopnarain.*—That in consequence of the information received from the Sub-Inspector of Police by direction of the Deputy Magistrate here I proceeded with you on the 14th up the river to Kuroee, in Mundleghat, one of the villages named as suffering greatly. The account here received from the villagers was that there had been no case for five days and only ten people had died, the population being 300; they said that West Kuroee was affected; had the tide permitted us to proceed there I have little doubt we should have found the information incorrect.

2. The Native Doctor whom I sent to Santipore, in Mundleghat, reports on the 17th that neither at that place nor at Chitra (both villages are alluded to in my letter of the 18th) had he heard of a single recent case; he had therefore gone to Bamunarrah, where he was assured he would have plenty to do. I have received no letter from him since.

3. *Mundleghat, east of the Roopnarain.*—Though not next in point of time, I shall for convenience give here the result of my visit yesterday to vil-

ages in Mundleghat east of the Roopnarain. The following are the places of which I have received reports from the Chowkeydars, when they could be found, the head man of the village, or some comparatively intelligent inhabitant:—G. penathpore, a large village near the river, population 500, has not been a single case of cholera. Surbuaria, no case. Pakomia, Koomurnugger, Ryediggee, Attrilia, Nokoli Daria, Sooputtee, Joonda, Kessarpore have all suffered, but no case during the last four to ten days. Oosmanpore; here I found a greater number of recent cases than I have anywhere else; four persons were reported to be then ill; I saw two of them. The village consists of about fifty houses; the disease has been here since a month after the cyclone; forty people have died; the Chowkeydar on the 18th. Rammugger, a village about half a mile from Oosmanpore; here cholera appeared to be commencing. On the 17th the first case occurred; fatal on the 18th, when another man was attacked. I gave a good supply of pills to the Outpost Peon at Oosmanpore, one of the most intelligent and active men I have met on these Districts. Mookolia, population 250, deaths ten, spread over a long time. Saool, houses forty-eight, deaths twenty-seven, has been here fifteen days. One man died on the 17th, two reported to be then ill. On going to see them I found there was only one, an old woman, who appeared to be quite well. This is one of the many cases on which there is great exaggeration; the man who told me there were two was an intelligent Mussulman living within twenty yards of the house in which he said the sick were.

4. If the Native Doctor now in Mundleghat, west of the Roopnarain, reports no greater sickness than he has hitherto met with, I shall send him over to Oosmanpore.

5. *Tumlock.*—There have been a few cases of cholera here lately; the people generally go to Mr. Houghton, Assistant Superintendent of Police, for cholera tincture, on which they appear to have great faith.

6. *Country between Tumlock and Santukalles, on the Buldeo.*—On the 18th, on my way to Kookrahatee, I visited a number of villages. Soonabshoomy, population 450, deaths 150; no sick at present. Gunputnugger, population 120, deaths forty; no case for ten days. Parkaldar, population 335, deaths fifty-eight; no case during the last thirteen days. Soonberin, population 200, deaths twelve; none the last four days. Chuk Simlah, population 500, deaths ninety-six; none for the last six days.

7. *Ooturbar.*—Visited Ooturbar, situated a long way up and to the south of the Buldeo. The following was the information received from Monahur Mundde: houses fifty-eight, deaths twenty-five; no case during the last eleven days. Mahomedpore free from sickness. Ootur Sen, out of 300 houses there had been only eleven deaths; none for sometime.

8. *Shampore, west of Cassi River.*—On the 17th I visited Shampore; it consists of ten villages. The Amoen of Deolee gave me the following information regarding his three villages:—Deaths in Deolee thirty, Panchyukewal twenty-four, Kissore Chuk twelve; striking an average from these would give 210 deaths for the ten villages. One man said he thought there had been 300 deaths; even the latter would be but a comparatively moderate mortality. In 1862 the population amounted to 4,000.

9. The Native Doctor or Dispenser who has been stationed here since the 9th had the following return to his treatment: 9th, eighty cases, two deaths; 10th, three cases; 12th, five cases; 13th, two cases, one death; 14th, 15th, and 16th no case at all. As for the eighty cases the first day, I suppose they included all who had a little diarrhoea or colic.

10. As he had not seen a case for three days, it appeared evident that either the disease had abated, or the people had not confidence in him. I was therefore about to bring him away with me when a man came to report two cases, so I left him. No report received from him since.

11. *Tankrakhallee and Nurghat.*—The Sub-Inspector stationed at Tankrakhallee and the Head Constable at Nurghat told me that there was great sickness in the villages south of the Huldee. At Nurghat itself, with a population of 300, there had not been one case. At the market held at Tankrakhallee I obtained the following information from villagers:—Nundpore, population 600, deaths thirty; none for three days. Henohee, population 150, deaths seventeen; last case four days since. Ashultur, population 450, deaths ten; still there.

12. I left Sub-Assistant Surgeon Kallee Prossano Ghosal at Tankrakhallee to make minute enquiries and take up his residence where he found most sickness. No report from him yet.

13. I found the Sub-Assistant Surgeon much more active than I anticipated; he walked with me one day for seven hours, and on the two occasions I called at Tankrakhallee I found him out visiting the surrounding villages.

14. From Nurghat I sent off an order to the Native Doctor at Dayboy for him to proceed at once to the south of the Huldee and station himself at Kalketkallee, a place the Head Constable at Nurghat said would be one of the most severely affected villages.

15. *Dayboy and other neighbouring villages*—From the Native Doctor at Dayboy I have received a report as follows:

From 25th to 31st December treated seventy cases of cholera; thirty deaths. From first to 15th January, two cases; one death. He gives the names of a great number of villages quite free from cholera.

16. *Bussolia Order.*—Native Doctor Ummar Khan, whom I sent to Bussolia at the urgent request of one of the villagers who stated cholera was raging there, reports that he has not seen a single case. In the house of the man who reported the sickness there were two people suffering from fever, and a third had diarrhoea; the last had been supposed to be cholera. I ordered the Native Doctor to proceed to Pookrahatee and await further orders. No letter from him in reply.

17. *Mysadul.*—In the villages in the neighbourhood of Rengee Bussunt from the 9th to the 17th the Native Doctor reports having treated 113; deaths twenty-five. A fresh supply of medicine has been forwarded to him.

18. *Seetalpore.*—In Seetalpore and surrounding villages, from 12th to 19th, exclusive of the 14th, 189 cases; twenty-two deaths. The Native Doctor here has also had a further supply of medicine.

19. *Santipur.*—At Chuck Simlsh, mentioned above, I saw three cases of small-pox in one house. There had been a fatal case in the same house fifteen days before; said to be the only cases

in the village; it will not long be so, as there is not the slightest attempt to keep children and others from sitting close to the sick. At Karama Bala, in East Mundleghat, I saw another case. The man had caught the infection in Calcutta; the eruption appeared two days after his return home. A servant of Mr. Houghton also caught the disease in Calentta; he is now laid up in Tumlook.

20. I have written to the Secretary to the Principal Inspector-General and to the Civil Surgeon at Midnapore, asking them to send me Vaccinators.

21. In conclusion I beg to bring to your notice the very great assistance in many ways Mr. Houghton, Assistant Superintendent of Police, has given me and the Native Doctors under me.

P. S.—Since writing the above I have received a report from the Native Doctor in West Mundleghat; only five cases in six days, two deaths. I have therefore ordered him to proceed at once to Oosmanpore and report direct to the Magistrate of Howrah.

From R. W. SWITZEN, Esq., F. R. C. S., Assistant-Surgeon, on Special Duty, to D. J. McNEILLY, Esq., Joint Magistrate, on Special Duty, (No. 1, dated the 24th January 1865.)

I HAVE the honor to submit, for the information of His Honor the Lieutenant-Governor of Bengal, the following account of my proceedings in the Hidgellee District, now suffering from an epidemic of cholera.

2. I arrived at Contai, which was selected as the starting point for the surrounding country, on the morning of the 11th instant; the medicines did not reach me until the following day, having to come by water. The reports of the presence of cholera all round were numerous, and it was stated to be rather increasing than lessening. Having five Native Doctors at my disposal, I at

once distributed them to the places named in the margin, they being *sacred* for the people around to find medical assistance in. All these men were liberally supplied with rum, mustard, cholera tincture, and a tin box containing, with directions in Bengalee, those medicines in convenient forms most useful for checking the disease. They had orders not to go more than three or four miles in any direction from their posts, as if they roamed about applicants for medicines could not readily find them, nor would I have been able to ascertain what work they were doing.

3. The country immediately around Contai seemed to suffer greatly; all work was suspended in the Executive Engineer's Department from the impossibility of getting labour, and I was myself detained at Contai and prevented following in the track of the Native Doctors by inability to procure carriage. On the 12th, 13th, and 14th instants numbers of people from neighbouring villages came into Contai for medicine, and all seemed anxious to get it. During these three days I distributed 500 cholera pills with quantities of chlorodyne, cholera tincture, and mixture, &c. Amongst others, men from the villages named in the margin all got the drugs. From one village a petition, signed by fourteen ryots, was sent praying for a Native Doctor. The numbers

Cocleypore.  
Harrapore.  
Nesapore.  
Kugla.  
Coomapore.  
Pondore.  
Dhamra.

lying in cholera at the time the applicants left their villages varied from two to ten. The greatest number of deaths in any village reported was forty, and ranged variously down from that. On the 14th men from the villages of Cooleypudah and Neemapore returned for more medicines, having got some on the 12th; they stated no deaths had taken place where the medicines had been given: from another village out of ten attacked, who had taken the medicine, seven recovered and three died.

4. I left Contai on the 14th instant, and stopping at Kalcenugur. I saw the Government Salt Darogah, an intelligent Native, to whom I had previously given two bottles of the cholera tincture. He had found the disease in the Villages of Budge-Budge, Barriopore, and Columdan, and had treated seven, of whom one died, two were still ailing, and four had perfectly recovered. I gave him a supply of pills and continued on to Hurriah. Arriving on the 15th I found the Native Doctor I had placed there, and he reported having treated between the 13th and 14th but four cases which were in the immediate neighbourhood; of these one died. Intelligence of his being at Hurriah had not yet penetrated to the District, but the Police had aided in letting the people know where medical assistance was to be found. During my stay there I distributed from my own stock medicines to thirteen applicants from the Villages of Borillia, Ooja, and Jeeradnugger, with what result of course I do not know.

5. Leaving Hurriah on the morning of the 16th, and giving medicines to all who asked for them along the road, I next visited Argowal. Here I did not find the disease to be bad; in four days eleven cases were treated by the Native Doctor and but one died; two fresh cases occurred on the 17th. From what I could see and hear I considered that the epidemic was travelling from the north towards the south, and accordingly went in that direction after it. I arrived at Tajpore on the evening of the 18th, and found, as I expected, it was worse there. Out of twenty-three attacked and treated four had died. In Bastopora one had died; five still bad. In Gindeepore four were bad. In Oorseerabad out of thirteen seven had died. On the 19th I went to a village called Nugwan, five miles from Tajpore; there I saw three cases, all almost moribund. I gave medicines to four applicants and left a small supply with the Police in case others should seek it. I returned to Tajpore the same evening and found four cases I had personally treated were doing well; three of them I left out of all danger on the evening of the 20th, when I returned to Contai to replenish my stock of medicine and to meet you.

6. In travelling over this line my route often lay across country where there were no roads or tracks, and I could well perceive the general condition of the country—both place and people. It is such as one would always expect to suffer from sporadic cholera, diarrhoea, dysentery, low forms of remittent fever, and in fact all epidemic diseases. Filthy festid banks covered with green slime and vegetation with branches of trees rotting in them and the country and form to many villages the only supply of water. A little corner of this is as it were raised off sometimes by a slight bamboo fence, from which water for drinking is taken. Many ditches of stagnant water have runned

act as general diffusers of malaria. It is very hard to do anything for a people who will not help themselves, and laziness and apathy seem to be the prominent characteristics of a Bengalee villager. The District has of course suffered from the late cyclone. Some fields of rice lie rotting on the ground not worth harvesting, large trees uprooted in many places, and roofless houses may be counted by hundreds. From a calamity such as this a greater increase of sickness may of course be expected from the additional privations and losses to which the wretched people have been exposed. But the bad water, rice swamps around and daily flooding of the salt lands by the tide must always make this an unhealthy District. I believe Government is going to do the only thing that can improve the place, namely reclaim the salt lands by the construction of bunds closer to the rivers and small khalls which intersected the whole face of the jungle. When this is done, if they could be made to keep their tanks clean and sweet, or sink wells where feasible, I believe the rate of mortality would be diminished one-half, and greater freedom from epidemic and zymotic diseases secured. Instead of putting their shoulder to the wheel to help themselves, the only effort I saw made to avert the prevalent sickness was a poojah in the midst of a salt jungle, consisting of sixty-eight small baskets of parched rice, with sweetmeats and cocoanuts to match. I walked over a great part of the country myself and amongst their houses and villages, and most certainly believe that till they improve their manners and customs of living, attend more to cleanliness in their houses and villages, no human aid can ever avert, although it may lessen, the pestilence stalking ruthlessly through them.

#### Relief Operations in the Districts visited by the Cyclone of 5th October.

From H. L. DAMPIERE, Esq., Commissioner of the Nuddea Division, to the Secretary to the Government of Bengal.—  
(No. 2304, dated the 31st December 1864.)

I HAVE the honor to submit, for the information of the Government of Bengal, Mr. McNeile's final Report\* regarding his relief operations. The Magistrate of the 24-Pargannahs informs me that he has made application direct to Government for Medical assistance for the southern part of his District. On first hearing of the outbreak I requested the Civil Assistant-Surgeon of Nuddea to order the Native Doctor from the Charitable Dispensary at Meherpora to proceed at once to Adipore and there to place himself under the orders of the Magistrate, to whom I requested the Deputy Inspector-General of Hospitals to communicate departmental instructions for the Doctor.

2. Sicknes at Meherpora has very much diminished this year, and I have requested the Civil Assistant-Surgeon to place the Sub-Detention Jail Doctor in charge of the Charitable Dispensary under the direction of the Sub-District Officer.

3. I should have recommended that the Native Doctor from Mulnath be sent to the 24-Pergunnahs, but he has, I understand, been ordered to take charge of the Barriparah Dispensary at Kishnaghur, in the neighbourhood of which sickness has become very bad again.

4. I have requested the Magistrate of the 24-Pergunnahs to take steps to remove from the north to the southern part of his District the Native Doctors who were specially sent out in connection with the epidemic.

5. I have also suggested that (if not done already) he request the Civil Assistant-Surgeon to draw up simple instructions for the treatment of cholera; and that he distribute printed Bengali translations of these, with supplies of the remedies prescribed, not only to the Police Officers and other Officials, but to the Zemindars and intelligent inhabitants of villages.

6. In the present stress for Medical assistance I suggest that the Native Doctors in charge of one of the Sub-Divisional Lock-ups might advantageously be withdrawn temporarily and made available for the special duty, apprentices, &c., being placed in charge of the Sub-Division, which are trifling charges while the places are healthy.

7. From Koeshtra I should think that, as a temporary measure, the Native Doctor might be made available, Dr. Grant undertaking the sole charge of the Station duties for a short time.

8. Copy of the 4th, 5th, 6th, and 7th paragraphs of this letter have been forwarded to the Deputy Inspector-General of Hospitals at Barrackpore for his information.

From D. J. McNALLY, Esq., Joint Magistrate, on Special Duty, to the Secretary to the Cyclone Relief Committee, — (No. 25, dated the 23rd December 1864.)

I HAVE the honor to report my further proceedings from the 28th ultimo, the date of my Memorandum No. 2, forwarded to you on the same date.

2. In that Memorandum, you will recollect, I expressed my opinion that indiscriminate distribution of relief was no longer required in the tracts of country which had previously been supplied from the Depôts under my charge. I have understood from you that the Committee accordingly approved my proposal to dispose of the last consignment of stores granted by them by placing them at central spots in the charge of Gomastahs under the orders of the local Officers, who are now engaged on both sides of the river in making inquiries from village to village as to the actual losses sustained by families and individuals; the stores to be given to these persons only to whom those Officers should grant orders on the Depôts.

3. This change of system has been carried into effect. I have established central Depôts at Diamond Harbour, Koekhata, Balliahatta, and Kedgerao; the first three placed under the orders of the Civil Assistant-Surgeons, whilst the other three remain under the charge of the Magistrate

of Midnapore. The stores left at these four stations are—

	Rupees	Dollars	Sees	Gees	Chittas	Bid Hoicks	Huz
	Mds.	Mds.	Mds.	Mds.	Mds.		
Diamond Harbour	1,000	200	52	60	284	2,000	2,000
Koekhata	600	120	12	20	150	1,000	1,000
Balliahatta	600	120	12	80	181	1,000	1,000
Kedgerao	1,200	240	24	60	333	2,000	2,000
Total	4,800	960	80	200	600	6,000	6,000

4. A bundle of ninety-two blankets has also been left at Balliahatta.

5. The returns of expenditure of these stores will be submitted by the Gomastahs in charge of the Depôts to the Sub-Divisional Officer at Diamond Harbour and to Mr. Dickens respectively, and will be supported by the original orders granted by those Officers as vouchers, and those Officers will forward their reports and accounts to you. Under these circumstances I respectfully submit that my services are no longer required in carrying out relief operations under the orders of the Committee.

6. Enclosed are Statements shewing, with as near an approximation as possible to accuracy, the manner in which the supplies sent out under my charge have been distributed. No portion of the consignments specified above (paragraph 3) is included in these Statements. The details of the Statements have been taken from the Weekly Returns of the Gomastahs employed in the distribution. In those which refer to the number of persons relieved I place no great confidence, for the amount of work to be performed rendered it in most cases absolutely impossible for the distributors to make accurate estimates of the numbers of men, women, and children who daily crowded round them. The estimates actually given have, I have no doubt, been made by dividing the total amount of the various stores expended during the day by the rations fixed for each individual; and as different rations were prescribed for adults and children, the estimate of the proportionate numbers of men, women, and children has been guess-work.

7. The totals, however, may be accepted as fairly correct, and the same remark, I believe, applies generally to the Statements shewing the quantities of stores distributed. It would be irrational to suppose that accurate weighments and strict honesty have everywhere been the rule. The Committee will not be surprised to learn that one Gomastah has been criminally convicted of selling their stores in the Culpeo Bazar, and that I found it necessary to dismiss two others without pay on grave suspicion of a similar offence. But I fully believe that the stores committed to the Gomastah's charge have, with slight loss, found their way to the people for whom they were intended; and I found my conviction mainly on the fact that, having on a recent occasion had an opportunity of visiting nearly all the Depôts after the Gomastahs had left them, I was everywhere told by the people on the spot that the poor had been generally and freely relieved. In two places, indeed, I had the satisfaction of being met by a complaint on the part of some of the richer inhabitants that they had not received the assistance which had been given to their less fortunate neighbours.

grievances which they amusingly urged with genuine indignation.

8. I may add that in three or four of the principal Depots I have had the benefit of efficient and trustworthy superintendence. My thanks are due to Mr. Fraser, at Saugor; Mr. West, at Dowlatpore; Mr. Ridley, at Kedgeree; and Baboo Dunkian Chunder Catterjee, at Diamond Harbour, for the useful assistance they have given me in this respect. They are also due to Mr. O'Flaherty, Executive Engineer at Contai, for undertaking to superintend the relief operations in the interior of Hidgeljee. I wish also to record again my obligation to Captain Williamson, of the Steamship *Tessa*, and his Officers, for the ready aid they have afforded me throughout in transporting and landing the stores.

9. The Statements speak for themselves and require no further comment. They are accompanied by original receipts, returns, &c.

10. The effect of the operations undertaken by the Committee throughout the tracts in which I have been employed has been to save the inhabitants from starvation, and enable them to weather, no doubt with some difficulty and distress, the interval between the occurrence of the cyclone and the ripening of the remainder of their crops. It is difficult to give any accurate estimate of the proportion of the crops which has escaped throughout the tracts which were inundated, but I am of opinion that it will be found to be somewhat less than one-half. In this estimate I refer to the weight of the thrashed grain.

11. I am very glad to be able to report an unexpected improvement in the prospects of the people in some places in respect to their supply of fresh water for the rest of this dry season. I have been informed by Mr. Dickens that several of the tanks in the Dero Pergunnah, which had been spoiled by the influx of salt water, have in some unaccountable way recovered their sweetness. It might be supposed that the first accounts received of the extent to which the salt water had impregnated these tanks were greatly exaggerated. But we have one notable instance of a large well-known tank at Tumlook, the water of which was undrinkable for many days after the storm, and which is now quite fresh. The cause of this phenomenon is worth careful investigation, for it is not patent to ordinary intelligence. Mr. Dickens will, I believe, devote his special attention to the matter.

12. Several tanks have been cleaned or baled out, and similar operations are still being carried on by the local Officers. In many places good water will be procurable in no other way.

13. I have already reported to you the recent lamentable outbreak of cholera on both sides of the river, and every effort has been made to procure and send down Doctors and medicines. You are aware that the Medical Department have been able to supply us with only three Doctors up to date. I requested Mr. Payne, who has given us from the first so much assistance, to try if he could find some "Cobradores" to go down to the affected parts, and he made the attempt, but without success. They would not give up their own practice in the bazaars for such a purpose. Medicines have been meantime dispatched to

Mr. Dickens, to the Deputy Magistrate of Diamond Harbour, and to Mr. Ridley, for distribution to all applicants, and I have requested those gentlemen to apply to you for any further consignments they may require. I say little else can be done, but the measures taken cannot possibly meet the emergency, which is real and pressing. I beg to suggest that the Committee should address Government on the subject immediately.

From J. GEORGEAN, Esq., Under-Secretary to the Government of Bengal, to the Commissioner of the Nuddea Division.—(No. 314, dated the 17th January 1865.)

I am directed to acknowledge the receipt of your letter No. 29Ct., dated the 31st ultimo, forwarding Mr. McNeile's Report of his proceedings since the 28th November last in the Districts that have suffered from the effects of the cyclone.

2. The Lieutenant-Governor approves of the measures already adopted by you for meeting the demand for the services of Medical Officers; at the same time I am to forward, for your information, copy of Government-order No. 11, dated 4th instant, to the Officiating Principal Inspector-General of the Medical Department, communicating instructions for the Medical relief of the Districts concerned, which, in the opinion of the Lieutenant-Governor, sufficiently meet their present requirements.

From S. C. BATLEY, Esq., Junior Secretary to the Government of Bengal, to the Officiating Principal Inspector-General, Medical Department.—(No. 11, dated the 4th January 1865.)

In modification of previous orders the Lieutenant-Governor desires me to say that Mr. McNeile will continue in charge of the measures adopted for the relief of sufferers by the cyclone. He will be directed at once to place himself in communication with you and to post the Medical Officers placed at his disposal in the most convenient positions for affording Medical aid to sufferers from the epidemic. It is understood that two Assistant-Surgeons can be detached for superintending the Native Doctors. Those Officers should be placed in convenient situations and should each have a separate circle of superintendence which should include both banks of the river. They should report to Government through Mr. McNeile, sending copies of their Report to the Deputy Inspector-General of the Circle.

2. Mr. McNeile will arrange for the pay of the Compounders and locally entertained Native Doctors in communication with you. It is believed that the Relief Committee will place the necessary funds at Mr. McNeile's disposal. Under this arrangement it is not necessary that the Civil Surgeons of Midnapore, Howrah, and 24-Pergunnah should superintend the proceedings of the Native Doctors detached on special duty.

3. A fresh supply of the necessary medicines should be sent with the Surgeons accompanying Mr. McNeile to the Districts suffering from the epidemic.

From C. F. MONTESON, Esq., Commissioner of the Burdwan Division, to the Secretary to the Government of Bengal,—(No. 12, dated the 30th December 1864.)

In continuation of my second Report, No. 169, on the effects of the cyclone of the 5th of October last, intimating that I was about to proceed to the southern parts of this Division, I have the honor to communicate that I have visited portions of the Howrah and Midnapore Districts which were reported as having suffered the most, and beg to submit a more detailed account of the disastrous consequences of the hurricane, and, as required by your letter No. 5284 of the 26th ultimo, of the measures adopted by myself and the local Officers with a view to affording relief to the people, which was much needed immediately after the storm.

2. I shall first state what has fallen under my observation during my recent tour.

3. I proceeded, in the first instance, to the southern part of the Howrah District and stopped at a village called "Dhaja," lying on the right bank of the River Hooghly, near the mouth of the Damoodah River.

4. This spot had been selected by Mr. McNeile, in communication with myself, as a relieving Depot, and was the first point of the Howrah District to its extreme south in which it was considered necessary by me to adopt any measures for supplying relief from time to time to the agricultural population.

5. Above this point towards Calcutta the actual necessities of life and food did not appear to have been felt by the people of the District after the day immediately succeeding the storm. Those who had saved themselves from the influx of the river wave left the part of the country which had been submerged and sought refuge in the nearest parts which had not been reached by the inundation; in no case had they far to migrate, the area flooded being of no great extent, including the principal part of the Shampore Police Station and a small part of Oolooberiah. Beyond this tract there was no want of food and none of employment for those who were willing to take it, and rice was known to be selling in the bazaars inland at a lower rate than it could be procured in Howrah and Calcutta; necessarily the stores of food which existed in the submerged tract lying on the banks of the Roopnarain and Damoodah and Hooghly Rivers were either destroyed or injured, but beyond that food was plentiful and cheaper than it could have been purchased in Howrah or Calcutta.

6. On enquiry at Dhaja I found that the inhabitants had been on two occasions relieved by the aid afforded from the Cyclone Fund; the Native Officer in charge of the embankments in that quarter informed me that gratuitous distribution of food, though eagerly sought for and accepted, had in some measure prevented the supply of labour for the repair of the bunds, and labourers could not then (six weeks after the storm) be procured though 3 annas per diem had been offered them.

7. The crops in this part, as far as I could judge from their appearance, though nearly ripe, did not seem to be materially injured, and the demand for pure water, which was reported in the first instance, does not obtain at the present time.

I tasted some of the water in the tanks near the river and did not perceive it to be any way brackish.

8. The same remarks would apply to two Stations lower down, Mahropata (Fort Mornington) and Parcolpara westward on the left bank of the Roopnarain River, which I visited in succession, and I communicated my views to Mr. McNeile, so that no further stock of provisions will be sent there from this time.

The area of the Howrah District as affected by the storm wave I would demarcate by the following boundaries, viz.: the Midnapore and Oolooberiah Road to Koella Ghaut on the Roopnarain River (this is the extreme point to the north); the Roopnarain River to the west; and the Hooghly River to the east and south; in short embracing the greater portion of the Mundleghat Pargannah, belonging to Baboo Heralall Seal.

9. The loss of human life in these parts, as far as I have been able to ascertain from personal enquiry and information derived from Government Officers and those employed in the embankments, I would compute at two thousand, including all classes, throughout the Howrah District, and the destruction of cattle to eight times that number. The loss of crops I consider to be comparatively trifling, for though they were in many parts submerged, and the whole of the Mundleghat embankments were seriously injured, the surplus water found immediate outlet.

10. I should not omit to notice at this point the succour that was afforded to the distressed tenantry by the proprietor of the Mundleghat Estate, Baboo Heralall Seal, immediately after the storm; had other Zemindars only exerted themselves at first and given assistance to their ryots in the same manner as this gentleman and two others, whose liberality I shall notice hereafter, have done, the distress would not have been so great as it eventually proved itself to be.

11. From Parcolpara I proceeded up the Roopnarain to the Sub-Divisional Head-Quarters of Tumlock; here I found that the Native town had been much injured. The Cutcherry, Sub-Divisional House, the School, and other Government buildings had been entirely destroyed and were lying in ruins, and the Sub-Divisional Officer, Baboo Shama Churn Chatterjee, was holding his Office in a tent when I arrived.

12. The inhabitants, I was gratified to find, had set to work in real earnest to repair their losses and had already re-constructed their shops and houses. Trade was also flourishing, and I found rice and other commodities of food selling at prices lower than in the Calcutta markets.

13. The Deputy Magistrate, Baboo Shama Churn Chatterjee, and the Assistant District Superintendent of Police, Mr. Houghton, had done much in encouraging the inhabitants to help themselves and not be dependent on charity. Private subscriptions had been collected immediately after the storm through the agency of these Officers, which funds, coupled with the aid afforded under my orders to Mr. Smith, the Magistrate of Midnapore, in rice and money supplied from the Government Treasury, had afforded instant relief to those who were in extreme distress.

14. The tanks in the Town of Tumlock had been choked with fallen trees, thatching grass,

and other vegetable matter, which at first rendered the water in them not only useless but most offensive, labourers, however, were being busily employed in clearing them out, and some were already being again utilized.

16. The Sub-Divisional Offices must be entirely renewed; these were chiefly thatched buildings, and at no time anything but indifferent Offices, being constructed of half burned bricks cemented with mud.

I shall suggest hereafter that the premises lately occupied by the Salt Agent, which are now to be purchased at a very moderate price, and are in every way well suited for the purpose, be secured for the use of the Sub-Divisional Offices, and my intention is to visit that place again in the early part of the ensuing month in company with Colonel Short, the Superintending Engineer.

16. From Tumlook I proceeded down the right bank of the Roopnarain with a view to ascertain the state of the country in Mysadul and Doroo Pergunnahs.

17. The Magistrate, Mr. Smith, who had preceded me, suggested the formation of a relief Depot at some point on the right bank of the river, and I had accordingly arranged for a consignment of stores at a large village called Banka, on the Banka Canal, which intersects the Mysadul Pergunnah between the Roopnarain and Huldee Rivers.

18. From enquiries that I made I found that such a step was actually not requisite, and the Assistant Superintendent of Police, Mr. Houghton, who had just returned from that quarter, reported to me that the inhabitants were suffering no distress from want of food, and that he saw no necessity whatever for having any stores placed there; my suggestion, therefore, was accordingly abandoned.

19. I then proceeded along the river's right bank to the Hooghly river, skirting the Doroo Pergunnah to Kookrahatee, Diamond Point, and thence up the Huldee River to Balliaghata on the left bank of the river.

These points circumscribe as it were the Pergunnah of Doroo Doinnan and the southern portion of Mysadul, and embrace the whole of that part of the headland which, as I previously noticed from its peculiar position, was the most exposed to the storm wave.

20. The embankments throughout the southern portion of this Circle have been almost entirely gutted and eroded, and very great loss has occurred to the agricultural population in these parts, especially about Kookrahatee and the lands lying to the north-west of Doroo. The embankments from the Banka Canal to Geokhally, however, had been but very slightly injured, and such trifling damage as had occurred had resulted from the influx of water from the Huldee River from the south. The crops, however, in this portion are very fair, and will, I have little doubt, produce a good harvest.

21. The Pergunnah of Doroo has the form of a basin, and, as far as I have been able as yet to judge from personal inspection, I believe the only crops in it that will have been able to withstand the effect of the wave are those immediately adjoining the embankments where the surplus water had found ready and efficient drainage.

22. The Pergunnah of Doroo constitutes one of the Government "Khas" Estates of Hidgeloo and is let out in farm to one Joynarain Giree, who

is also a wealthy Mahajun in these parts. Both the farmer and his Naib, Sgorutram Prodhon, have been bright exceptions in rendering assistance to the distressed tenantry. Each of these Native gentlemen gave away all grain they had in store, and divided any clothing that they could procure among the sufferers who applied to them for assistance before relief was sent from Calcutta. The Naib, moreover, has been constant in his attendance on the Officers who have visited Doroo, and has personally rendered great assistance and given information that could be depended on when required.

23. The Collector, Mr. Robinson, in his wanderings in these parts, has just informed me that "Joynarain Giree is said to have given away 10,000 maunds of grain, and his Naib 6,000 maunds, besides other articles; indeed, many ryots have told me that they don't know what they should have done had it not been for these two men's kindness and charity during the interval between the cyclone and relief coming from Calcutta." Conduct such as this, as remarked by Mr. Robinson, seems to be deserving of approbation, especially as it may be considered disinterested, the former having only a temporary interest which will soon expire, and his Naib having no interest beyond that of his Master's.

24. I shoujd not omit to mention that a boat full of stores was dispatched from Tumlook by the Deputy Magistrate at his own expense on the 19th of October, which was distributed, as far it would go, to the really indigent and helpless.

25. From Balliaghata on the Huldee River I retraced my steps to the Hooghly and proceeded further south, taking the line of coast to Kedgerce, and from that point again down to the Russulpore River (which divides Northern and Southern Hidgeloo) to a village named Dowlutpore. At this place, as well as at Kedgerce, I examined the Store Depots established under the supervision of Mr. McNeile, and found that the provisions provided from the Cyclone Fund had been almost expended.

26. Mr. McNeile was at the same time distributing here, as well as at all the Stations already enumerated on the right bank of the river, large supplies of clothing which were eagerly sought after and accepted by the people, the more so as the cold season was fast approaching.

27. From the Huldee River to the Russulpore I could procure little or no information which could be of use to me as a guide to the extent of supplies required, or the localities to which it would have been advisable to send them, the inhabited portion of the tract being separated from the river by the abandoned salt laks, which are impassable at almost all seasons of the year.

28. Mr. Johnstone, the Assistant Superintendent of Police at Contai, had twice failed in an attempt to get to Kedgerce after on one occasion walking six miles along the river bank in search of a boat; and Mr. Pratt, the Deputy Magistrate of Contai, and Mr. O'Flaherty, the Executive Engineer, were equally unsuccessful in attempting to go by water in a small "dingee," the only boat they could find fit for service after the storm.

29. Mr. Smith, the Magistrate, had attempted, in company with Mr. Adams, the District Superintendent, to get to these parts by land from Balliaghata but was prevented, and he was compelled to take a carriage and by Contai and so proceed by Kedgerce by land on foot back to

Kookrahatese, which occupied him and the gentlemen that accompanied him, viz. the District Superintendent, Mr. Adams, his Assistant, Mr. Johnstone, and the Executive Engineer of Midnapore, Captain Swayne, four days to accomplish it.

30. The Executive Engineer of the Hidgellee Division, Mr. J. O'Flaherty, had received from Calcutta two boats full of stores dispatched by Mr. McNeile to Alipore and Ramnagar, two central spots in the interior of South Hidgellee, and had superintended their distribution to the principal sufferers, and no further assistance in those parts appeared to be necessary. Little or no distress prevailed at and about the Sub-Divisional Head-Quarters of Contai.

31. The loss of life in the Pergunnah south

Pergunnah	No.	of the Roopnarain River, as far as I have been able to ascertain from statistics collected and prepared by the Deputy Magistrate of Tumlook,
Mysadal	3,700	
Casimnuggar	650	
Gomia	20	
Tarapora	130	
Nashal	80	
Arramnuggar	100	
Goonighur and Agra Chirk	8,000	
Badebpur	10	
Lopra	12,000	
Total	24,690	is most distressing.

marginally the returns in round numbers, shewing the destruction of life as supposed to have been caused by the effects of the cyclone.

32. The destruction of cattle is also estimated at 95,000 head over the same area, and may, I think, be accepted as fairly correct. It should be noticed that in these parts cattle have always been most abundant, and are reared not exclusively for agricultural purposes but for the Calcutta and other markets where they used to be seen driven in large herds for sale to the cattle fairs at Tumlook and Ooloobheriah.

33. The great expense of posturage available in the "Jalpee" lands and on the embankments has always been favorable to the extensive breeding and rearing of cattle, and it is not surprising that a very large majority of these have been circumvented and swamped in the inundation, and this fact is clearly demonstrated by the numberless carcasses that are even at the present time observable in all parts.

34. With regard to the loss of human life I am disposed to think that the numbers given is somewhat excessive, as the figures represent those who are reported as "missing," and my surmise has been in a measure confirmed by the information that I have usually gained from some of the villagers that people who were supposed to have been lost in the tempest have returned. However, there is no doubt whatever that the loss has been most appalling and that the distress has been necessarily very great.

35. From an inspection of the embankments along the southern coast I am satisfied that the greatest violence of the storm wave occurred at the points lying between Diamond Point (Jingurkhalle) and the mouth of the Huldee, the upper section of the embankment having been completely swept away and deposited in the excavation to the rear.

The land lying in the immediate interior and west of the embankment at this point is comparatively higher than other portions of the Pergunnah; and the crops, therefore, fortunately have not sustained that amount of severe damage that they have met with far over inland towards the Kookrahatese and Contai Duk Bend, where they have

been almost entirely destroyed; but the loss of human life, cattle, and property has been most grievous, and the cattle, from what I can see, have been almost completely destroyed.

36. As regards the depth of fresh water, which was one of the chief objects of my enquiry, I am happy to be able to report that the want, in those parts of the country which I have above noticed, is not so disastrous as I was led to anticipate from the reports I had first received.

37. As far as the rivers are within reach of the villages little or no difficulty is experienced, and a deficiency of water is a subject that has rarely been mentioned to me on my landing at any of the villages *along the river's bank*, though demands for clothing and other comforts are urgently applied for by every one as an enquirer reaches the village outskirts.

38. The chief want of fresh water is doubtless confined to villages more inland, and I have adopted measures which I will notice hereafter, which I trust will render all necessary aid in this important question.

39. At Kedgerjee, where the storm wave had been very severe, a want of fresh water had occurred from the very commencement.

The Acting Post-Master, Mr. James Ridley, whom I should here favorably notice as having rendered much assistance in the matters of distributing relief, had dug a well in the vicinity of the Post Office, the water of which was being freely used by the inhabitants and appeared to be excellent.

40. To meet the difficulty of procuring water I instructed Mr. Dickens, the Assistant Magistrate of Midnapore, to leave his Station and to proceed at once southwards from Tumlook, making arrangements as he advanced for clearing out tanks in central positions. I had observed that this had already been effectually done at Tumlook as already noticed, and at Diamond Point the villagers had cleared out two large tanks and replenished them by letting in fresh water from the river while the tide rose; the workmen receiving, under instructions given by Mr. McNeile, food in return for their labour.

41. As this system of employing labour appeared to me to be conducive of much usefulness, I instructed Mr. Dickens to commence excavating wells in the interior wherever the cleansing of tanks was likely to be attended with any delay, and, in communication with the Secretary to the Relief Fund, I had placed at my disposal, for the furtherance of the works and other charitable purposes, the sum of Rupees 4,000, as well as other supplies of food and implements.

42. The proposition of excavating wells has not, I believe, been successful or popular with the inhabitants, who have, without any good reason, as far as I can judge, a prejudice against the use of well water, and appear to be stolidly indifferent in providing means against future scarcity of fresh water during the ensuing dry season, which will inevitably ensue unless they will interest themselves in the measure.

43. I am happy to have to report that I have heard from Mr. Dickens that since his first tour throughout the villages in Tumlook and Mysadal, (shortly after the cyclone,) the water of the tanks, in some places which was at the commencement brackish and altogether useless, has recently become purified, and to the taste devoid of all saline matter. The cause of this phenomenon is to me

inexplicable, but the circumstance is nevertheless indisputable and necessarily one of much congratulation.

44. I annex copies of reports which I have recently received from Mr. Dickens, who is still engaged solely in the special duty that I have assigned to him, and is, from all that I can learn, carrying out the necessary operations with much tact and judgment.

45. The Collector, Mr. Robinson, who is at present occupied in examining the state of the crops in Tumlook, Myeadul, and Doroo, reports on the subject in these terms:—"I am well satisfied with Mr. Dickens' proceedings, what he has to do he does thoroughly, and does not raise difficulties about performing a duty which is far from a pleasant one, but takes facts as he finds them, and tries to make the best improvements he can devise."

46. In Northern Doroo Mr. Dickens has found the water in most tanks fairly good, and I myself have found the same in Tumlook and North Mysadul, but in the southern parts of Doroo some villages are badly off; however, as Mr. Dickens is now at Balliaghata, I hope he will be able to get the better tanks in central localities in tolerable order for drinking purposes. Some of the tanks already contain fresh water without having been in any way attempted to be cleansed by the villagers farther than by the removal of trees and branches from their surface, and though it may eventually transpire that water will not be procurable at easy distances, I would not anticipate that any excessive hardship in this respect will ensue. Upwards of fifty tanks, and those the best in Doroo, have been cleaned out, and relief has been afforded to the poor of two hundred and thirty-seven villages by orders on two Depots of stores at the Kookrahatee and Balliaghata Depots, which will be noticed hereafter.

47. In addition to the calamity of the storm, I regret to have to communicate that both cholera and small-pox have commenced to make their periodical ravages amongst the inhabitants of these parts; particularly in the Pergunnahs of Myeadul and Doroo sickness had increased more than had been usual in previous years.

48. On observing this I at once placed myself in communication with the Secretary of the Cyclone Relief Fund Committee with a view to securing the services of three Native Doctors supplied with medical stores to visit that part of the country, travelling from village to village, and so affording relief to the sufferers; and I have also arranged with Mr. McNeile for the passage of three additional practitioners and a further store of medicines as soon as they can be procured in the next Steamer.

49. The Native Doctor at Midnapore has also been deputed under instructions from the Magistrate to render assistance in the parts about Tumlook, the Native Doctor of that Station having been attacked with cholera.

50. From information lately received I have learnt that the two Native Doctors who were first deputed, and who are now located at Kookrahatee, and at a large village in Doroo named Deboj, have rendered good service to the sick, and that cholera and small-pox has sensibly abated, the prevailing sickness being fever and diarrhoea. Cholera, which prevailed for some time

with great violence at Tumlook, has almost disappeared.

As an instance of the direful effects of sickness I would notice that in one small village, containing one hundred and fifty inhabitants, forty had already fallen victims to cholera and small-pox.

51. Complaints have been made by those in quest of labour that the agricultural population, though clamorous as to their losses and distress, will not come forward to work, though most liberal terms are offered them; but I believe the explanation offered by many whom I have questioned to be incontrovertible, in that the time of those who have hitherto escaped the scourge, has been and is fully occupied in attending to the sick and reaping the crops that have been spared to them.

52. During my tour, which, as I have above noticed, was confined chiefly to villages in the vicinity of the rivers, I have been unable to form a definite opinion regarding the rice crop in general; at present, as far as I have been able to judge from their appearance, the crops along the river's banks do not appear to be permanently injured; but this fact is in a measure generally admitted, and the chief amount of loss is reported to be confined to the interior, where the drainage is deficient, and the flood has remained on the surface of the cultivated lands for several days.

53. In the Pergunnah of Doroo, which I have been able to inspect from various quarters, I am satisfied that very serious injury has occurred, as there are scarcely any crops visible inland, but no correct judgment can be formed as to the injury sustained in other quarters until the corn is ripe and ready for harvest, for, notwithstanding that it may appear at present uninjured, the produce may be small, and it stands to reason that in places where salt water has been lying over cultivation for twelve hours when the plant is growing the produce must necessarily be deteriorated.

54. I have directed the Collector of Midnapore to visit these parts as soon as the harvest time approaches, and to submit, for consideration, a special Report on the subject.

Mr. Robinson, the Collector, is at the present time engaged in inspecting the several Estates affected by the inundation, and on receipt of his report I shall be prepared to proceed again to Mysadul and Doroo with the object of seeing what steps it may be necessary to adopt, and I shall accordingly place myself in communication with the Board of Revenue should it appear to me necessary to recommend any abatement or remission of revenue.

55. I will now notice the steps that were taken by the local Officers immediately subsequent to the cyclone, and I would remark that the Magistrates and Collectors of Hooghly, Howrah, and Midnapore, as well as the Deputies and District Superintendents of Police, and their Assistants, exerted themselves most energetically in their endeavours to collect all information and render assistance in the Districts in their respective charges.

In the other Districts the storm was attended with little or no disaster, and in Hooghly districts, and that only among the poor, was but momentary.

56. As your first letter directed me to report merely on the effects of the gale, I did not consider it necessary to particularise anything further

than the injury that had been occasioned, and it was not until I had perused an official letter of the Magistrate of the 24-Pergunnahs that I was aware that any report of that nature was necessary, or that the Officers of Government had been accused of being regardless of the misfortune and distress of the people.

57. The Magistrate of Midnapore, Mr. A. Smith, in concert with the District Superintendent of Police; Mr. F. Adams, on the dates

	8th October.
22	Mounds of Rice.
1	" Khazari Dall.
* 1	" Salt.
1	" Kullie.
173	Beers Oil.
	9th October.
24	Mounds of Rice.
1	" Khazari.
1	" Mowoor.
1	" Salt.
1	" Miscellaneous spiccs, &c.
	10th October.
22	Mounds of Rice.
3	" Mowoor.
3	" Dall.
3	" Khazari.
1	" Salt.
1	" Oil.
	15th October.
24	Mounds of Rice.

ed and paid for from funds subscribed and placed at the Magistrate's disposal by the European and Native gentlemen at Midnapore as soon as the first tidings of distress reached the Station, and from the same source funds were placed at the disposal of Mr. Houghton, the Assistant Superintendent of Police at Tumlook, and the Deputy Magistrate of Contai by Mr. Smith on his arrival at Tumlook on the 10th of October.

58. Two Committees were immediately formed at Contai and Tumlook under the superintendence of the local Officers, and relief, as far as the limited funds would admit of, was at once distributed, and, on receiving information of the disastrous effects of the storm, I sent instructions by Telegram via Bancoorah (the direct line of communication being dismantled) to the Magistrate to advance from the Government Treasury at that Station any funds that might be required to meet the wants of what was reported to be a starving population, and to proceed himself with all possible despatch to assist. Mr. Smith had anticipated my orders, and had proceeded at once to the south in company with the District Superintendent, and by the 9th every Executive Officer in the District was engaged in some part of its southern portion in rendering such assistance as was within his power, and under the greatest possible difficulties and discomfort, all means of communication, except on foot, being impracticable.

59. I cannot commend in too high terms the energy evinced by Mr. Smith, the Magistrate, and Mr. Adams, the District Superintendent of Police. Baboo Shama Churn Chatterjee, the Deputy Magistrate of Tumlook, is especially deserving of commendation for the energetic and decisive measures he adopted immediately after the storm, and the services of Mr. Percival Dickens, Mr. Houghton, the Assistant District Superintendent of Tumlook, Mr. Johnstone, the Assistant Superintendent of Contai, Mr. H. B. Pratt, and Baboo Krishna Persaud Ghose, Deputy Magistrate of Contai, are deserving of acknowledgment.

60. I would also not omit to bring to notice the cheerful and valuable assistance rendered in this District by Mr. J. O'Pharthy, the Executive

Engineer of Southern Bengal, and Mr. James Ridley, the Post-Master of Kedgeree, in the matter of relief afforded by the Cyclone Fund.

62. I extract here some information on the subject from a semi-official letter that I received from Mr. Smith, which describes what was done at the first by the Midnapore Authorities:—

" The Deputy Magistrate of Tumlook at once sent for Rupees 500 worth of stores from Calcutta, and I sent him Rupees 500 worth more from Midnapore from the public funds you ordered to be placed at my disposal. The original intention was that these should be distributed gratuitously. I found, however, that the people were quite able and willing to pay for them, and that the distress at first existing was due in the main to the washing away of the bazar with the store in it and the temporary inaccessibility of the stores that did exist. Labour, too, was urgently wanted by reo for Municipal purposes, by the Mahajuns for re-building, and by the Irrigation Canal Company, who made use of the occasion to send large supplies of grain to their works, and were especially anxious to get all the labour they could procure and ready to employ all who wished for it. The amount I had at my disposal from private charity was quite equal to what was required at the time. When the operations under Mr. McNeile commenced Tumlook required no assistance, and, except two hundred Rupees subsequently received for distribution in the same manner as the money I made over to Mr. Houghton and the bale of cloth that you sent, nothing further was needed at all."

" The tract of country between Tumlook and Banka, examined by Mr. Dickens, has sustained much less injury than Tumlook itself and no great distress is prevailing, and he considers the people quite equal to the occasion."

63. It must be borne in mind that the southern parts of Midnapore are difficult of access at any time, and were especially so under the peculiar circumstances following the cyclone; this was intended to have been the purport of my remarks when in my first report I alluded to the "delay in communication," and had no reference to the distance of the Postal line between Midnapore Dudder Station and that of Burdwan.

Moreover, as in the 24-Pergunnahs, with a basis of operation in Calcutta, no European Landholders, Missionary gentleman,\* or others were to be found ready in Midnapore to come forward to give information and render assistance.

64. From Kokrahatee to the Russulpore River the unfortunate Mr. Botelho was the only person who, if he had survived, would have been of any assistance, and the absolute stoppage of communication caused by the complete disappearance of boats on the Huldeh and Russulpore Rivers, and the destruction of bridges on the whole of the tidal khals, would have rendered it next to impossible for the Magistrate to have communicated with him constantly even if he had been saved.

65. As regards the conduct of the Police in the Contai Sub-Division, animadverted on in my previous communications, I have to report that the Sub-Inspector of Kedgeree and one of the Constables who were put on their trial were convicted and sentenced to three months' imprisonment, and the Head Constable was degraded.

The Head Constable of Soothatta was punished departmentally, and the other Police gave explanation of their conduct, which was considered sufficient.

The trial of the Sub-Inspector accused of extortion had not been completed.

66. My previous remarks will have shewn that it was far from my intention to cast any reflection on the superior Officer of Police, Mr. Johnstone, who, on learning of the defection of his subordinates, instantly despatched a fresh body of Police, and after much effort, for which he deserves great credit, succeeded in getting to Kedgeroo. Mr. Adams, the District Superintendent, accompanied the Magistrate throughout his visits to the distressed parts of the District, and afforded the fullest aid in the measures adopted for relief, and I am much indebted to him, not only for the assistance rendered to the Magistrate on that occasion, but also for the zealous and efficient manner in which he aided in every way.

67. The proceedings of the Local Authorities at Howrah have already been reported by Mr. Craster in direct communication with the Government in accordance with orders received from you, and the parts in which the effects of the storm were most felt have been duly noticed in the early part of this Report. Baboo Hiralal Seal and the Rajah of Andool are the chief landed proprietors in those parts; the former, on receiving information of the distress from Mr. King, the District Superintendent, who proceeded south as soon as ever he could procure a boat, (a matter of no little difficulty after the storm,) at once despatched 500 maunds of rice and other stores in proportion for the relief of the ryots in his Estates; but the Andool Rajah, from all I could ascertain at Oulooberiah, which I visited on the 17th October, and the Magistrate's reports, rendered no assistance whatever.

68. Baboo Hiralal Seal has, moreover, adopted necessary measures for the relief of sickness throughout Mandleghat, where, as in all parts affected by the inundation, it has commenced to make its appearance. At the present moment two Native Doctors are engaged in that Pergunnah under the pay and instructions of the Baboo.

69. The Magistrate, Mr. Craster, has reported that he was altogether unable to proceed to the south of the District owing to illness brought on by his exertions on the day of the storm. His presence, moreover, was urgently required at Head-Quarters owing to the town being full of Sailors, and also for other purposes.

70. The District Superintendent, Mr. King, and his subordinate Police exerted themselves with much efficiency from the commencement. Mr. King's report of his tour to the south has been already forwarded to Government by the Magistrate, and Mr. Craster speaks in most favorable terms of the assistance rendered by the force generally in the protection of valuable property buried ashore from the river, valued at upwards of a lac of Rupees, (the greater portion of which has in due course been restored to its rightful owners,) and providing shelter in the Cutcherries and Police Stations to the crews of those vessels which were washed ashore and left high and dry as soon as the flood subsided.

71. With the exception of one case the whole of the Police Force in the District remained at their posts, and, so far as I have been able to ascertain, they did all that was in their power to

The Police in the Town of Howrah were employed night and day in saving property, clearing the thoroughfares, removing fallen buildings and the like, and they did their work well.

72. In the District of Hooghly the Magistrate, Mr. Lt. Cockerell, raised a subscription of Rupees 1,400 from the European and Native gentlemen, and distributed the same to nearly nine hundred sufferers in and about the Towns of Hooghly and Chinsurah.

73. The Hooghly Branch of the British Indian Association also, in

"I am directed to observe that the Committee cannot speak too highly of the means adopted by you in ascertaining the people who are truly and most in need of aid, and to place at your disposal the sum of Rupees 20." (a portion of which is extracted marginally, immediately

came forward with a donation of Rupees 200, which was placed at the disposal of the Magistrate and distributed to the poor.

74. The Deputy Magistrate of Serampore, Mr. W. H. Ryland, adopted the same plan at Serampore, and distributed, from funds collected by him, amounting to Rupees 300, immediate relief to upwards of hundred persons. The Revd. Mr. Sampson and the Revd. W. Stewart rendered much assistance in collecting subscriptions, and relieving the poor at Serampore and its neighbourhood.

75. As I have above stated, there was but little actual distress in Hooghly as compared with the Districts lower down which were injured by the storm wave, and all that was necessary for the Magistrate to do was done.

76. The roads, which were completely choked by the falling of trees, were immediately opened out and cleared both in Hooghly and Serampore, and immediate injunctions were issued by Mr. Cockerell on the Zamindars to clear all tanks of trees and branches that had been buried into them. The rice crops, I am happy to record, are not injured.

77. With reference to the relief afforded by Mr. McNeile from the funds placed at the disposal of the Cyclone Committee, I beg to observe that it was mainly owing to the information obtained from the local Officers that this gentleman was enabled to establish relieving Depots and afford relief to parts of the Midnapore and Howrah Districts where it was most urgently required.

78. I will abstract in a few words the proceedings of Mr. McNeile as far as they are known to me, and of which particulars are given in his Reports herewith submitted in original:—

79. Mr. McNeile started from Calcutta on his first relief expedition on the 23rd of October. He took down a large consignment of stores, consisting chiefly of rice, dali, salt, and clothing, and landed them, under the charge of Native Comstabs, at the following places in this Division:—

Dinja ...	In the District of Howrah.
Fort Mornington } ...	In the District of Howrah.
Parolpara ...	
Kookrahatese ...	
Diamond Point, or Jingrakhafee ...	In the District of Midnapore.
Bellaghata ...	
Kedgeree ...	Hidgepore, Midnapore District.
Dawlupore ...	

80. The total quantity of rice sent to these places was 2,350 maunds. The system of distribution prescribed was simply this. All applica-

were to receive daily a single day's supply of food, and clothing was to be given out in certain fixed quantities to all who appeared to be actually in want of sufficient clothing to cover them. The necessity for effecting an immediate distribution over a very large area rendered it impossible to allow the people, who crowded to the Depots, to take away large quantities for subsequent consumption. Moreover, the plan ensured the distributions against applications from many who were not in real distress.

The Gomastahs were required to keep accounts of the quantities of stores distributed and the number of people relieved, and he submitted weekly reports to Mr. McNeile, certifying the mode in which they had been expended; these stores were speedily exhausted. In some places from 1,000 to 8,000 persons were fed daily, and the cloth and blankets were not sufficient to clothe above a small portion of those who were in need of them.

81. On the 8th of November accordingly Mr. McNeile again proceeded down the coast with a fresh supply. There appeared to be no occasion to alter the position of any of the existing Depots, nor to increase their number except by the addition of two Depots in that part of Hidgeljee which lie to the south-west of the tract which had been swept by the storm-wave, and where, as Mr. McNeile now learnt, an extensive fresh water inundation had been caused by the force of the wind having dammed up the waters of the Patro Mohan and Sunkurpore Khuls. Stores were therefore despatched by him, as soon as he returned, to Olapore and Ramnuggur, where they were distributed by Gomastahs under the supervision of Mr. J. O'Flaherty, the Executive Engineer of Hidgeljee, whose assistance I have already noticed.

82. On the occasion of this second expedition the condition of the people did not appear to be much improved except about Dowlipore, (the north-western part of Hidgeljee); neither life nor property had here suffered as severely as on those parts of the coast which lay to the northward. This was partly owing to the refuge from the storm wave offered by the sand hills to those human beings who were sufficiently prompt to avail themselves of it and to the cattle which managed to reach them, and partly to the action of the reverse-blast of the cyclone from the westward, which forced back into the sea the greater portion of the water which had rolled over the land before the first onset of the storm from the eastward and had inundated the crop. Dowlipore received no further supply of food from the Relief Committee, as it was really not required.

83. At Mr. McNeile's request the Committee then sent down a very large batch consignment of (120,000 yards) cotton cloth, the greater part of which was landed on the western side of the Hooghly.

84. The Gomastahs, who were entrusted with the distribution of the cloth, were required to dispose of it all as rapidly as possible, three or four days' notice having been previously given, and it was arranged to give out the cloth at the different Depots as nearly as possible at the same time, so that the probability of people obtaining larger supplies by travelling from one Station to another was next to impossible. The reports subsequently arrived clearly demonstrated that these directions were rigidly carried out.

85. From this period all occasion seemed now to have disappeared for carrying on the system of indiscriminate relief which had hitherto been adopted. Many individual cases of distress necessarily remained to be relieved; but the markets had been re-established. What was left of the crops had in many places almost ripened; and there was, as I have above mentioned, a complaint on the part of the Public Works Department Officers in some places that so long as the people were gratuitously fed they would not come to work at the repairs of the embankments.

86. Mr. McNeile accordingly, at my suggestion, made new arrangement for the distribution of a fresh and final consignment of stores which were entrusted to him by the Committee; the greater portion of them were landed at three central places—Kookrahatee, Ballinghatia, and Kedgerce. I deputed Mr. Dickens, the Assistant Magistrate of Midnapore, as already stated, to traverse the Pergusmabs of Doroo, Mysadul, Goomgur, Erinch, and Kushba Hidgeljee, which comprised the most severely devastated tract of country, and to conduct detailed enquiries regarding fresh water and the circumstances of the inhabitants further inland than I was able to penetrate, and it was arranged that he should relieve cases of distress by granting orders upon the Depots abovementioned to those whom he deemed worthy objects of relief. The stores accumulated at these Depots included large quantities of bill-hooks, hoes, and coir yarn for building purposes. Food was also supplied for the really indigent and in lieu of labour to those employed in the clearing of tanks; this system is still at work and is progressing favorably.

87. Mr. McNeile has performed the duty in which he has been deputed in a most energetic and complete manner, and I have much satisfaction in being able to report, from my own personal observation and enquiry, that the amount of relief afforded and distributed under the careful and matured arrangements made by him reached those for whom it was intended.

88. While he has been liberal in relieving immediate suffering his measures have been judicious, and I have no hesitation in regarding that I do not consider a more suitable selection for this important duty could have been made than that by which Mr. McNeile was deputed by Government to supervise and control the arrangements connected with the Cyclone Relief Fund.

89. In conclusion I would add that the general distress arising from want of food, clothing, shelter, and water has been tided over; doubtless very great suffering in many parts has been occasioned, the reparation of which requires many months to bring about, but the present distress is now chiefly caused from sickness, almost entire villages having been depopulated from those awful scourges—cholera and small-pox.

90. I have done as much as has lain in my power to procure medical aid and sufficient medicine, and Mr. McNeile is at the present moment engaging his attention to this important subject; the Government may depend on myself and the local Officers subordinate to me rendering all assistance that can be afforded towards alleviating the sufferings, and ameliorating, as far as possible, the state of the population in the affected parts, and all that is at present urgently required is to recruit the services of Medical Officers, which

I am unable to command, but which I have no doubt the Government will be able to provide.

91. One remark only appears to be called for before closing this Report, and that is one of much consideration, viz. what measures ought to be adopted with a view to providing against such calamities in future?

92. After the immediate and direct danger has passed away the people usually suffer on such occasions chiefly from want of good water. Measures should undoubtedly be taken to guard against such distress for the future, and the present is a fitting opportunity for the devising of some general project which would provide against a disaster such as has been recently witnessed, embracing the whole of that part of the country which is liable to suffer from the incursions of the sea.

93. The expenditure of large sums of money in desultory efforts and works having no immediate connection with each other, and not forming the basis of a general matured system, would be nugatory.

94. A suggestion has been made to me by Mr. Craster, the Magistrate of Howrah, which is worthy of deliberation, and is to the effect that "all funds that could be made available for the purpose should be devoted to the excavation of large tanks in central situations."

These tanks should be of such capacity as to contain sufficient water as might supply the wants of a certain area in case of the smaller tanks within it being rendered useless by an irruption of the sea; they should be protected by banks formed from the excavation as to preclude the possibility of their being overtapped, and which, independent of affording protection to the tanks, would be a refuge to the neighbouring inhabitants in case of inundation.

The construction, moreover, of large masonry granaries located in the vicinity of the tanks is also worthy of the attention of Government, and both these objects appear to be almost as important as that of protecting the country with embankments, and so far would be more useful than when the embankments, which are constructed merely to stem the torrent of the ordinary tidal wave, fail, as they did on the late occasion, the tanks would stand and afford fresh water, while provisions would be procurable from the store-houses.

The subject is, however, one of great magnitude and demands more practical information and conclusions than I am at present prepared to give, and its expediency should be most carefully deliberated on hereafter.

Memorandum by D. J. McNatta, Esq., Joint Magistrate, on Special Duty,--(No. 26, dated the 28th November 1864.)

During the past five days I have visited all the distributing Depots along the banks of the river, and my observations have convinced me that no necessity now exists for maintaining the system of indiscriminate relief which has, until lately, been required to meet the wants of the inhabitants. In many places the harvest has commenced; almost every where work is available either upon the embankments or otherwise; the markets are being generally re-established; the houses are being re-built. It is true that the run upon the Depots for food has been steadily on the

increase up to date, but that is far from being proof that distress has not been materially diminished. I have even heard complaints on the part of the Officers of the Department Public Works that the facilities for obtaining gratuitous support have affected the supply of labour for the repair of the embankments.

2. Under these circumstances the distribution of the fresh store of provisions and house-building implements, which has been placed at my disposal by the Committee, must be effected under different rules from those hitherto in force. No doubt many individuals and families are still in distress, and the object now is to relieve these individuals and families, and those only. This object will be attained by accumulating stores at a few central points, and giving relief from those stations to those persons only who may present certificates of their destitution signed by competent Officers who are engaged throughout the lately inundated tracts in making local enquiries.

3. In the 24-Pergunnah local enquiries have already been extensively made, and individual cases of distress relieved by donations in cash. It will, therefore, be sufficient to locate one large store at Diamond Harbour, and to authorise the Deputy Magistrate in charge of the Sub-Division and Baboo Brahmonath Sen, who is employed in the southern part of the Sub-Division in conducting relief operations, to grant orders on the storekeepers for any supplies which they may think required. The order in each case should be numbered, signed, and dated and handed over to the applicant to present in person, and a copy of it kept in a Register. The Deputy Magistrates will be supplied shortly with a note of the exact quantity of stores available for the purpose.

4. In Midnapore the Commissioner of Burdwan, who has accompanied me on my last tour of inspection, has promised to make an immediate arrangement by which the Assistant Magistrate, Mr. Dickens, will be put in charge of the conduct of relief operations of the Doroo, Mysndi, Goonghur, Princh, and Kush Higglee Pergunnahs. He will be empowered to grant orders on the stores which I intend to deposit for his use at Kookrahatee, Balliaghata, and Kadgeroo.

The Officers who grant the orders will be requested to use their utmost endeavours to induce the people, whenever it may seem advisable, to clean or bale out their tanks, or to dig wells, for the purpose of procuring a sufficient supply of good drinking water, and will pay those who engage in the work either in cash, or by orders on the Depots, as they may be instructed by the Authorities to whom they are respectively subordinate.

No stores whatever from this time forwarded will be given from any of the Depots under any orders except upon certificates granted as above described.

From D. J. McNatta, Esq., Joint Magistrate, on Special Duty, to the Secretary to the Relief Fund Committee,--(No. 30, dated the 23rd November 1864.)

In continuation of my letter No. 26 of the 16th instant, and of the applications thereto, I have supplemented on the 17th and 18th instant, the above the heavy weekly supplies of food, intended for stores to be distributed through the Depots situated in the districts of

4. In my letter abovesigned I informed you that I thought no fresh supplies of food would be required at Dowlatpore. I have since received reports showing that an enormous distribution has taken place there, as many as 5,000 people having been fed in one day. I have, however, also heard that food rice is now selling in that neighbourhood at a lower price than in Calcutta, and therefore I refrain from applying for any fresh store for Dowlatpore until I shall have had an opportunity of making fresh observations on the spot.

5. I have had an application made to me for a fresh supply at Moyapore, but I do not think it is urgently required. The people have work, and are altogether, in my opinion, well enough off to support themselves and their families.

6. On the other hand, the Commissioner of Burdwan has requested me to establish a new Depot at Banks, in Mysadut, at some distance from the coast, where it appears that the people are in great distress.

7. Stores then will be required to supply this new Depot, and also to replenish all the existing Depots except Dowlatpore and Moyapore. In the following indent it will be observed that much smaller quantities are entered opposite to the names of those places where gratuitous relief is now given to women, children, and invalids only than to those of the other Depots:—

*East Bank.*

	Rice.	Dall.	Salt.	Oil.
	Mds.	Mds.	Mds.	Mds.
Naldar	200	50	4	10
Palis	200	50	4	10
Koraput	200	50	4	10
Diamond Harbour	200	50	4	10
Kalewari	400	200	8	30
Garia	200	50	4	10
Gulps	200	50	4	10
Bangatalia	200	50	4	10
Banks	150	40	3	5
Total	1,850	500	31	78

*Work.—* At all these stations except Saugor supplies have been stopped to able-bodied men. At Saugor the numbers to be fed are considerably less.

*West Bank.*

	Rice.	Dall.	Salt.	Oil.
	Mds.	Mds.	Mds.	Mds.
Dalma	100	20	4	10
Chittagong	100	20	4	10
Khulna	200	50	4	10
Khulna	200	50	7	17
Mymensingh	600	100	8	30
Mymensingh	200	50	8	15
Mymensingh	600	100	8	30
Mymensingh	600	100	8	30
Total	2,000	400	23	90
Average	1,000	200	11.5	45
Total	2,000	400	23	90

In addition to the above stores at large a supply of building materials as the Committee think fit to send will be eagerly applied for by the people wherever the articles may be sent for distribution. I would propose to send large consignments of these articles only to those places where I can secure some constant supervision of the proceedings of the Agent in charge. I have such supervision at Diamond Harbour, Kedgeree, and Saugor.

7. Saugor has been already supplied with the articles indicated, and will require no further assistance of this description. A consignment was sent to Diamond Harbour, but it has been found quite insufficient to meet the demand. I propose to take to Diamond Harbour.—

2,000 Kodals,  
2,000 Kateries,  
800 Maunds of String.

and at least an equal quantity to Kedgeree. A third consignment of the same quantities will serve for the present to supply all the remaining Stations where such aid is required. I beg, therefore, to indent for the total supply of—

6,000 Kodals.  
3,000 Kateries.  
900 Maunds of String (or Yarn.)

From P. DICKENS, Esq., Assistant Magistrate and Collector of Midnapore, & W. L. F. ROBINSON, Esq., Collector and Magistrate of Midnapore, —(No. 2, dated the 11th December 1864.)

I HAVE the honor to acknowledge your letter of the 8th December; I have further to acknowledge the receipt of Rupees 800.

2. I arrived here on the morning of the 8th and found that the boat containing the supplies had not arrived; it arrived, however, on the following day.

3. On Tuesday and Wednesday I personally visited nineteen villages in the neighbourhood and saw the Headmen of several others. With regard to the relief stores I have adopted the plan recommended in Mr. Montresor's letter of the 30th November 1864, and Mr. McNeile's Memorandum dated 28th November 1864, of giving village tickets on the Depots, the villagers themselves undertaking the transport of the stores, and naming some person or persons in whose hands they wish them placed. The persons into whose hands the things are given bind themselves to give only to the poor who are ~~bad~~ ~~side~~ unable to work, and whose names are given in a list which is checked by me wherever I go in person. As, however, there are upwards of 200 villages and chucks in Dooon only, I find it impossible to visit each.

4. The supply of water is, I am glad to report, sufficient in quantity in all the villages I have visited, and tolerable as regards quality in most, excellent in two or three. I do not think therefore that as regards Northern Deroo there need be any apprehension on that score. Well, I understand, if dug will not yield drinkable water here. What I propose to do is to have some of the best and largest of the tanks which are at present dirty, and the water of which is undrinkable, cleaned out and emptied. No new supply of water can, however, be introduced at this time of the year, as the river water is already salt.

I have reason to believe that tanks which were so salt as to be almost undrinkable immediately after the storm are perfectly sweet now. The large tank at Tumlook is an instance of this.

5. Sickness, I regret to say, is fearfully on the increase. Cholera is spreading and has attacked almost every village. Five or six persons died here last night, and in one small village I visited, containing a population of 150, forty deaths were reported. Crowds of people apply to me daily for medicine; indeed this is their greatest want. I have represented the urgent necessity of letting us have a couple of Doctors for Doroo to Mr. McNeile, who has promised to have them sent forthwith, and also one for Kedgeree, where I found that cholera had broken out badly.

I propose placing one at Kookrahates and another at Halliaghata with instructions to make visits into the interior. Should there be any delay on the arrival of these Doctors I am apprehensive of the most serious consequences. The people are already beginning to leave their houses in some quarters.

On Thursday evening I went with Mr. McNeile in the Steamer Teesta down the line of the Depots to Kedgeree and saw the different stores ashore and left instructions with the Gomastahs at each place, returning on Saturday, the 10th. I also placed (with the concurrence of Mr. McNeile) a supply of twenty maunds of rice and other articles in proportion at the disposal of Mr. Ridley, the Post-Master of Kedgeree, for the relief of any *bond fide* poor who might come to the Depot in the interval, which must elapse before I can visit the villages in that neighbourhood. I leave this place in a day or two for Kistonogore, about six miles distant in the centre of the Doroo, near Sootahatta, where I shall be encamped a few days en route to Bulliaghata.

7. I have to add that I have received a letter from Government appointing me to Baraset, and as I may be required to take charge at once, I shall be glad to know whether you can send any one to relieve me here and carry on the work. I sent a Telegram this morning.

From P. DICKENS, Esq., Assistant Magistrate and Collector of Midnapore, to W. L. F. ROBINSON, Esq., Collector and Magistrate of Midnapore,--(No. 4, dated the 13th December 1864.)

I HAVE the honor to report that, since despatching my letter of yesterday, the poor of seven villages have been relieved by orders on the Depot.

2. I have to-day visited the Villages of Agadaroo, Sreedharpur, and Boistum Chuck, and taken measures and given advances for the cleansing of five tanks, all of which I have seen, and the water of which I have had tasted.

3. One of these tanks (the largest and best) at Boistum Chuck is in a very dirty state, though the water is sweet. I have given orders to have it thoroughly cleansed and some of the water drawn off, and have allowed Rupees 20 for the purpose. When cleaned it will afford a supply of good water sufficient for the present season to all the neighbouring villages; the other tanks require only partial cleansing, and small sums varying from Rupees 1 to 5 have been given in each case. When these tanks are cleaned, I shall have no fear as regards water for the northern villages in Doroo.

4. I find the people exceedingly apathetic in applying for relief; this I attribute chiefly to the lamentable amount of sickness. However, even in the villages I personally visit, I have the utmost difficulty in collecting the poor; those who come are generally those able to work, and to whom I am unable to give certificates on the Depot. The amount of distress amongst the latter class is very great, and no embankment works have as yet been commenced in this neighbourhood.

5. The sickness is, I fear, not abating and as yet no Doctors have arrived.

From P. DICKENS, Esq., Assistant Magistrate and Collector of Midnapore, to W. L. F. ROBINSON, Esq., Collector and Magistrate of Midnapore,--(No. 5, dated the 15th December 1864.)

I HAVE the honor to inform you that I yesterday visited the whole line of villages between this place and Sootahatta, distributing relief to the poor, and taking particular notice of the state of the water in each village.

2. I had heard that the water in Sootahatta itself, where there is a fine large tank, was brackish and undrinkable. I found it, on the contrary, in good condition, and the water free from salt. I find that the complaints of bad water which reach me from the interior are in nearly every case exaggerated, and are put forward mainly in the hope of obtaining advances, and I am apprehensive of the work not being properly carried out unless I am on the spot to superintend. This causes me much loss of time; if I could obtain the assistance of one of these D. P. Overseers it would save me much delay.

3. I think that the inference may fairly be drawn that if the water in these is not so salt as to be undrinkable or noxious, that in others which I have not yet seen cannot be in a worse state as regards brackishness, for the storm wave passed equally over all; of course they will differ as regards impurities and decayed matter, and will require different degrees of cleansing, some not requiring any.

5. A Native Doctor and medicines arrived yesterday.

From P. DICKENS, Esq., Assistant Magistrate and Collector of Midnapore, to W. L. F. ROBINSON, Esq., Collector and Magistrate of Midnapore,--(No. 7, dated the 25th December 1864.)

I HAVE the honor to inform you that I left Kookrahates on the 21st instant, having finished operations in Northern Doroo.

2. One hundred and six villages in Doroo and Mysadal have been relieved by orders on the Kookrahates Depot, and I think that acute distress has been considerably mitigated.

3. About 250 Rupees have been given out for cleansing and clearing tanks, but I have not found it necessary, except in one or two instances, to have the water bailed out. The state of the water in Northern Doroo (the southern boundary of which will be a line drawn from Jamburiah to Diapond Point and passing through Sootahatta) is not such as to cause any grave apprehension.

4. With regard to sickness I believe that the presence of a Doctor with medicines will have an excellent effect. Indeed, from what I hear from the Native Doctor, Tarinji Bunder Goopto, (who arrived here from Kookrahates yesterday,) I am in hopes that cholera is abating.

5. The point which I feel most uneasiness about is that no embankment repairs have as yet been commenced, and I fear that great distress prevails amongst the poor who are liable to labor, and whom consequently I have been unable to relieve.

6. I reached Halliaghata on the 21st and on the 23rd visited Dayboy and other villages in the neighbourhood.

7. Loss of life has been far heavier than above Kookrahates. The infant and aged have mostly perished, and consequently the distress (amongst the class) is not so great.

8. The state of the water, I regret to say, is bad; the tanks, though cleaner than in Northern Doroo, are unmistakably brackish and the water very undrinkable. At all events the villages in this neighbourhood seem to be without clean water, except at Sootahatta which finds a supply of fresh water.

9. I am taking measures to have this tank, which is perfectly sweet, carefully conserved, as I conceive that the people of Southern Doros will have to rely mainly on this one tank for sweet water till the next supply of rain falls.

10. There are several fine tanks at Dayboy and elsewhere in the neighbourhood, but as the water is salt, it is obvious that the method to be pursued towards them must differ from that pursued towards the tanks in the north (which only required a little cleansing to right themselves), and that to do any good the water must be emptied out, and, if possible, the mud in the bottom dug fresh.

11. This is of course a much more costly operation than the other, and I propose, therefore, to select some thirty of the best tanks in central positions and to have them emptied out.

12. I have now one Doctor here and another at Kookrahates.

From D. J. McNELIS, Esq., Joint Magistrate, on Special Duty, to the Commissioner of the Nuddea Division.—(No. 6, dated the 2nd November 1864.)

I HAVE the honor to inform you that I have visited and relieved the following places since I started from Calcutta on Sunday:—

*On the East Bank.*

Naldari (Bosoi).

Fulta.

Noorpore.

Diamond Harbour.

Colpee.

Rungafulla.

*On the West Bank.*

Dhaja.

Fort Mazzington.

Parooppara (on the Hooghlyain.)

Kookrahates (Moteeram Chuck.)

I have also visited Tumlock, but found it unnecessary to leave any supplies there. I am about to proceed immediately in the Tug Steamer *Frances Gordon* down the Midnapore Coast as far as Cowcally. I have had an interview with Mr. Smith, the Magistrate of Midnapore, and received some valuable information from him. A full report of my proceedings will be submitted hereafter.

I am about to dispatch the Steam-ship *Teesta* back to Calcutta immediately, for a fresh supply of provisions, for which I have telegraphed to the Secretary to the Relief Committee. I propose to start from Cowcally to Diamond Harbour on Saturday in the Tug Steamer, and then, allowing her to go back direct to Calcutta, follow her up in the *Teesta*, which I hope will by that time have come down again re-laden, and send fresh supplies in shore at the various Depots established between the two and Calcutta. If this plan be carried out I shall probably reach Calcutta on Wednesday next, and shall by that time be able to judge of the further measures of relief which should be adopted.

A copy of this letter will be sent to the Commissioner of Bardwaj, and another copy for the information of the Secretary to the Relief Fund.

From D. J. McNELIS, Esq., Joint Magistrate, on Special Duty, to the Commissioner of the Nuddea Division.—(No. 1, dated the 27th October 1864.)

I HAVE the honor to report, for your information, that on Friday morning, the 21st ultmo, immediately after hearing from you that I was required to proceed down the Hooghly River with supplies for the inhabitants along the banks, I called upon the Secretary to the Cyclone Relief Committee and learned from him, the arrangements which were in progress for lading the Government Steamer *Teesta* with provisions. I afterwards had an interview with the President of the Chamber of Commerce, and then called upon the Superintendent of Marine, and some doubts having been expressed as to the capacity of the *Teesta* Steamer to convey all the stores required, I met the last-named Officer next morning at the Government Dock Yard and we inspected her. It then became apparent that it would be impossible to take in her, and in Cargo Boats towed by her, above half of the whole quantity of stores which were being collected for the expedition. I also then learned for the first time that it would be running a great risk to take her far below Diamond Harbour, the lower reaches of the river being unsafe, except in the very calmest weather, for flat-bottomed Steamers.

2. Captain Howe then proposed that a Tug Steamer should be sent down with Cargo Boats in tow, a plan in which, as supplementary to that of dispatching the *Teesta*, I fully concurred. You signified your approval, and Mr. Bullen forthwith engaged to provide the Steamer and send her after me to Diamond Harbour on the following Wednesday morning.

3. The lading of that portion of the stores which I proposed to take with me was delayed throughout Friday and Saturday morning by the incessant rain; but on Saturday evening they were all taken down the river to the Commissariat Wharf, where the *Teesta* was lying. On the same day I, with some difficulty, procured casks, ranging from twenty to forty gallons each, to contain a total amount of 1,000 gallons of water. These casks were shipped empty, and the water was put into iron tanks supplied by Mr. Obbard, the Superintendent of the Dock Yard.

4. On Sunday morning all the stores were put on board the Steamer and one Cargo Boat, and at 1 P. M. I started, accompanied by the Revd. Mr. Payne, who, as you are aware, had kindly offered his assistance in carrying out the relief operations. We brought eighteen Gomastahs, whom I intended to leave in charge of the various Depots which were to be established along the river banks.

5. The following stores were shipped on board the *Teesta* and her Cargo Boat:—

Rice	...	...	1,080 Maunds.
Dall	...	227	"
Oil	...	20	"
Perched Rice	...	30	"
Salt	...	30	"
Chillies	...	15	"
Tobacco	...	5	"
Slaghees	...	750 Picca.	
Cotton Cloth	...	2,000 Yards.	
Cooking Pots	...	500 (About.)	
Hooks	...	100	

6. At 8 o'clock on Sunday evening we reached Atoheepore, between which place and Calcutta the inhabitants, as you had informed me, required no immediate assistance. At day-break on Monday morning we weighed anchor, and in half an hour reached the Village of Horyagunge, on the right bank of the river, about six miles below Oolooborish. At Oolooborish itself the inhabitants were in direct communication with Calcutta and needed no supplies from me. At Horyagunge, though much damage had been done by the gale, the distress did not seem either to Mr. Payne or myself so severe as to justify me in giving away to the villagers stores which I expected to find more urgently required further down the river.

7. We accordingly proceeded to Naldari, near Birni, where a distributing Depôt had been previously established by Mr. Smith. We found that the provisions which he had left were all exhausted, and that the Gomastah in charge had gone away to Calcutta. I landed a fresh store here, but observed that the inhabitants were in such a state of a destitution that they would require another supply after a few days.

8. The villagers here mentioned several Zemindars, who had property in the neighbourhood, and who, they said, had rendered no kind of assistance to their ryots. I think it right that their names should be known, so that they may contradict the account which I received if it be untrue. The gentlemen referred to are Baboo Anunda Chundra Mookerjee, Bisheshwar Mookerjee, and Gangadhar Banerjee, of Kidderpore; Prannath Chowdry, of Sutkhira; and Apoorba Krishna Bahadoor, of Sohu Bazar, Calcutta.

9. From Naldari we went on to Dhuja, on the west bank, near the mouth of the Damoodah River. Here I was informed that a deputation, consisting of the Izaradar of the village and some of the inhabitants, had gone the day before to Calcutta to represent the state they were in to their Zemindar, Baboo Heralall Seal, who was reported to have sent some supplies to the Shampore Bazar, a few miles across the Damoodah, but who had done nothing for Dhuja and its neighbourhood. I established a Depôt, and then crossed the river to Fulta, which Mr. Payne had visited while I was engaged at Dhuja.

10. At Fulta we found the people in great want of food. They seemed, however, to be a more than usually lazy and thankless set. It was with great difficulty and some hours' detention that we succeeded in inducing them to bring on shore, carry up, and store the provisions I gave them. They appeared also a little inclined to be quarrelsome, so I left two Gomastahs in charge, and sent orders to the Sub-Inspector of Etagachy to see that no disturbance took place. As the Fulta Bazar appeared to be a very disreputable place, I located the Gomastahs with their store at the little Village of Jafarpore, a short distance to the southward. Here also the Zemindars seem to have done nothing. Their names are Kali Krishna and Narendra Krishna, of Sohu Bazar.

11. From Fulta we proceeded to Noorpore, reaching it about sunset. We had had a hard day's work, but Mr. Payne went on shore immediately, and finding that the Gomastah, who had been left there on the occasion of the previous expedition, had distributed very nearly all his stock of provisions, he sent him off to me. I supplied him with a fresh store, and then we anchored for

the night. Mr. Payne was here informed that Baboo Shamprosed Chowdry, of Bhowanipore, and Preonath Roy Chowdry, of Baug Bazar, had sent no supplies to the ryots on their Estates. Baboo Rajkrishno Mittra (of Simla Calcutta) had, on the contrary, sent all kinds of necessary stores for distribution to the people on his property.

12. On Tuesday morning we crossed over to Port Mornington. Here two Gomastahs had been left by Mr. Smith. Their stores had been exhausted, and they left for Calcutta three days before. I left a fresh supply in charge of a Gomastah, and then went up the Hoopnaraia River to Tumluok. Here I met the Assistant Superintendent of Police, Mr. Houghton, and the Assistant Magistrate, Mr. Dickens, who had just been on a tour of inquiry, which had embraced with other localities the southern bank of the Hoopnaraia down to the mouth. He told me that there was no starvation along that line of country, but that immediately to the southward in the Khas Mehal of Doroo the distress was very great. Tumluok itself had been severely visited by the storm, but the inhabitants were rapidly recovering themselves, and Mr. Houghton told me that out of a sum of Rupees 129 placed at his disposal for charitable purposes about Rupees 100 were still in his hands. It was obviously unnecessary to leave supplies there, so I crossed the river (Hoopnaraia) to Paroelpara.

13. Paroelpara we found almost swept away, and the remaining inhabitants in great distress. The villages situated a little further inland seemed, however, to be much less injured. I left a small supply for the relief of Paroelpara itself and its immediate neighbourhood, and then proceeded to Kookrahatee, (Moteeram Chuck,) which is at the northern extremity of the Doroo Mehal. Just before I reached this place I fortunately met Mr. Smith, the Magistrate of Midnapore, who had travelled up from Kedgeree, and who gave me some valuable information as to the places along the coast where relief was principally wanted. They will be noticed in order below.

14. Kookrahatee itself we found in a terrible state. The stench from human bodies and carcasses of cattle, which lay around in all directions, was almost insupportable. We tried to induce the villagers to throw the bodies into the river, but they would all die before they touched one of them. We met here the Naib of the Izaradar of the Mehal, who assured us that he (the Naib) had immediately after the catastrophe distributed gratis 6,000 (six thousand) pounds of rice, his own property, to the people. Some light was subsequently thrown on this by a very probable story. We found out some days afterwards that he had had some 12,000 pounds in store when the cyclone occurred. About half was washed away, and the remainder so damaged as to be unfit for sale in Calcutta. This damaged rice he had disposed of on the spot, without gratuity; but it is a curious circumstance that on re-visiting Kookrahatee the next day we were told that rotten rice was selling at Rs. 1.5 per rupee at the time, and on the day of our first visit we found in the same place about a dozen bags of rotten rice, which we could get an intelligent native to sell us at an even lower price. The condition of the ruined houses was

careful investigation. I formed a fresh Depôt here, leaving rice only. They had dali in the bazar, and salt was expected immediately from Tamlock.

15. We then crossed over to Diamond Harbour and anchored for the night. Deputy Collector Baboo Brohmooth Sen came on board at day-break next morning, and I supplied him with some blankets and a small supply of dali, which was required by the Sub-Divisional Officer. He had also applied to me for rice, but I was obliged to withhold a supply until the arrival of the Tug Steamer in the afternoon from Calcutta. Meanwhile I proceeded to Culpee with the view of supplying that place and Rungafulla, and returning to Diamond Harbour in time to meet the Tug immediately on her arrival.

16. At Culpee I found that the store which had been left there was exhausted and the Gomastah had gone away. I sent a fresh store on shore and re-established the Depôt. Here Mr. Payne and myself had a conversation with an agent of the Zamindar, Baboo Harb Peraud Roy Chowdhury, of Chukarberria. This man had been about a week at Culpee, and had come, he said, with orders from his Master to help the ryots with money "if they required it" to re-build their houses. "He saw that they were getting on very well without it," so he had given them nothing. On further enquiry it appeared that he had brought nothing to give them. We made special enquiries here about the means available for procuring fresh water. For about three weeks, the people said, they would be able to procure fresh water at ebb tide from the river. All their tanks were spoiled, and they all averred that, if new tanks were excavated, they would fill with salt, not fresh water. This is a point which cannot be decided except by actual experiment, and I have directed the special attention of Baboo Brohmooth Sen to the matter. He has just been despatched to Culpee, and will shortly report the result of such an experiment, and also of baling out an old tank which has been spoiled by the sea. As soon as the works in question are commenced all relief will be withheld from able-bodied men who refuse to assist in carrying them out.

17. From Culpee we proceeded to Rungafulla, re-enforced the Depôt there with a considerable supply, and then returned to Diamond Harbour, having expended all our stores of rice, but having the larger portion of all the other provisions still in hand. I reserved them, because I expected to find them more required in the western bank, and because I wished to establish larger Depôts on that side of the river which could not be visited by the inland Steamer, and to which it was therefore advisable, with a view to saving the Committee's funds, to arrange for as few visits as possible.

18. I reached Diamond Harbour at sunset on Wednesday evening and found that the Tug had not arrived. I went on shore at once and had a consultation with Baboo Hem Chunder Sen and Baboo Brohmooth Sen, Deputy Magistrates, about the best inland sites for the establishment of new distributing Depôts. I think I may readily explain verbally the conclusions which I have arrived on the subject, and as I now have an immediate opportunity of doing so, I do so, reserving the right to a subsequent

19. On Thursday morning before day-light the Steam Tug *Princess Gordon* arrived with a large fresh stock of rice, dali, &c., and I sent on shore a stock sufficient for a few days' consumption. I also sent a number of "chyoones" (baskets for baling out water.) The stores brought down by the Steam Tug consisted, according to the invoice sent, of—

Rice	...	2,250 Maunds.
Dali	...	315 "
Salt	...	20 "
Blankets	...	250 Pieces.
Cotton Cloth	...	2,000 Yards.
Cooking Pots	...	150
Chyoones	...	140

20. From the Pilot on board the *Princess Gordon* I learned that it was impossible for the Steamer to touch at, or approach any point on the western bank between Diamond Point and Kedgeree. I also found that Mr. Fraser, who was on board, was in urgent want of a fresh store at Saugor. This necessitated a change in my plan, as described in my letter to your address, No. 1 of the 27th ultimo, a change the nature of which will appear as I proceed. I first ran down to Mud Point, meeting on the way and taking in tow the *Swiftsure* Lugger, which had been placed at my disposal by Captain Howe. At Mud Point I made over a Cargo Boat to Mr. Fraser with a large stock of provisions and some water casks, a few ready filled for immediate use. The others he would fill from the river at low tide. I tasted some of the water at Mud Point at about half ebb. It was very slightly brackish. I have no doubt that for the next fortnight water fit for drinking purposes will be procurable at low tide down both banks of the river as far as Mud Point.

21. After dispatching the boat under Mr. Fraser's charge, I went across to Kedgeree and anchored for the night. Here we were employed up to 2 a. m. on Friday morning re-distributing our cargo and preparing two boats for despatch up the coast to the Hullee River. At day-break we commenced landing stores at Kedgeree. The work was completed in about three hours, the people assisting us with a cheerfulness and alacrity which I have seen at no other place which we have visited. We had the satisfaction, before we left the spot, of seeing nearly 600 people sitting round and receiving, without any confusion or difficulty, their day's rations from the Gomastah. The relief here given was most seasonable and was received with evident gratitude.

22. At Kedgeree I found Mr. West, Superintendent of Embankments, who kindly took charge of a store for the Hullee River, and engaged to land, house, and leave it in charge of the Gomastah I sent with it. We towed the Boat nearly to the mouth of the river, and returned to Kedgeree, whence Mr. Payne and myself started in the *Swiftsure* (to the Commander of which, Mr. Thompson, I am indebted for most energetic and valuable assistance throughout) for the Hullee. We had sent the Cargo Boats on in the morning, and we came up with them inside the bar at the mouth of the river at about 11 p. m. Now our difficulties commenced. The tide runs up and down this coast with great force, and the sand banks made the navigation very difficult. When

the flood made on Saturday morning we started for Ballighatta, about six miles up the river, with one Cargo Boat in 'our wake. When we reached the spot the Cargo Boat could not follow us to shore. The tide swept her past, and then her crew sat adown after their manner and allowed her to drift stern foremost up the stream for more than two miles. Our only resource was to land and send men up the bank to tow her down. This we did, but we lost about four hours; the result of which delay was that, with all the expedition we could employ, we failed, after getting our Depot established at Ballaghata, to reach the bar at the mouth of the river before the water was too low to cross it. Inside the bar, therefore, we had to anchor for the night.

\* 23. The second Cargo Boat was intended for some place a little to the south of Diamond Point, and thither with great trouble we brought her, having more than once to go back, or lay to, in the Lugger to explain to the crew of the Cargo Boat how to trim their sail so as to follow us. At about 11 A. M. we reached a place which appeared suitable for the purpose, but before we could bring up the Cargo Boat the tide turned and she had to cast anchor half a mile below. Mr. Payne then very kindly volunteered to remain by her in the *Savanna* while I went out in a Boat to the Steamer, which was by appointment waiting for us off the Point. I accepted his offer and went at once.

24. Very large stores were left at Balliaghatta and Diamond Point, so that another such troublesome voyage need not be made for some time.

25. I arrived at Diamond Harbour about half an hour after sunset and found the *Tesia* Steamer

waiting with stores. The stock differed very much from that which I had indented for by Telegraph, but it was sufficient to proceed with. I here received your letter regarding the formation of circles of enquiry into the condition of the several families in the distressed Districts. This will form the subject of separate communication. Here also I met with Mr. French, the Assistant Superintendent of Police, who had missed the Tug when she started from Calcutta.

26. I landed a fresh store at Diamond Harbour, and after picking up Mr. Payne and Mr. Thompson, who came up from Diamond Point at day-break on Monday, passed on to Kookrahatee. The Gomastah here gave me a very bad account of the inhabitants. They were greatly dissatisfied, demanding large supplies to take away to their houses, asking for things which he had not given, and threatening and annoying him in various ways. He attributed his difficulties, I suspect with some truth, to the Naib whom I have before mentioned. I landed a small fresh store, for the stock previously landed was not nearly exhausted, a remarkable circumstance when the evident destitution of the inhabitants is considered. I do not suspect the Gomastah, but I will direct my special attention to this Depot hereafter.

27. From Kookratabee I proceeded up the river towards Calcutta, re-enforcing the various Depots along both banks, and finally depositing a considerable store at Moyapore, a place which I had overlooked on the way down. I reached Calcutta at 7 P. M. on Tuesday evening, the 1st instant.

28. The subjoined Tables shew the total quantity of provisions landed by me at the various Depôts mentioned between the 24th October and the 1st November inclusive:—

On the Eastern Bank.

Names of Depôts.																					
	Rice.			Dall.			Parched Rice.			Salt.											
	Mds.	Mds.	Bags.	Mds.	Bags.	Mds.	Mds.	Bags.	Tobacco.	Mds.	Oil.	Mds.	Blankets.	Mds.	Cotton cloth.	Hukkahs.	Cooking Pots.	Baskets.	Water Casks.	Ghee.	Turmeric.
Moyspore	156	12		4	4	4	4	0		3	0	0	0	0	0	18	0	0	0	0	0
Naldari	300	32	4	2	2	2	2	2		0	0	0	0	0	0	10	0	0	0	0	0
Fulta	200	25														10	0	0	0	0	0
Noorpore	180	26	4	12	4	5	4	0	■	0	0	0	0	0	0	10	0	0	0	0	0
Diamond Harbour	850	46	4	22	22	22	22	22	1	1	1	1	176	0	480	20	0	0	0	0	0
Culpee	150	28	4	2	2	2	2	1	1	1	1	1	100	0	200	12	0	0	0	0	0
Bungafulla	198	37	4	1	1	1	1	1	1	1	1	1	100	0	200	12	25	0	0	0	0
Saugor	300	34	0	4	4	4	4	2	2	8	8	8	■	0	480	20	0	0	0	0	0
Total ...	1,834	286	17	53	10	4	6	490	1,360	53	118	136	76	16	16	5	5	5	5	5	4

On the Western Bank.

Dhaja		200	25	2	3	2	0	0	0	0	10	0
Fort Mornington		200	27	1	3	2	0	0	0	0	10	0
Paroolpara		200	19 <sup>1</sup>	2	3	2	0	0	0	0	10	0
Kookrabatoo		150	18	3	4	2	0	0	240	0	0	1
Diamond Point		450	90	16	6	1	1	3	144	780	12	90
Bellaghatty		450	90	16	0	2	2	3	168	800	12	80
Kedgeroo		200	39	7	4	1	1	3	100	400	10	60
Dewinipore		200	39	8	4	1	1	2	100	400	10	60
Total		8,050	241 <sup>1</sup>	55	58	13	5	33	397	8,050	142	550

29. The results of these operations I am not yet in a position to state except partially in respect to three or four places. Reports have been received from the Gomastabs of Nudari, Dhaja, Fulta, Fort Mornington, Kookrahates and Paroalpara. The first report of the Gomastab of Dhaja shews that he relieved nearly 9,000 persons in the course of five days, and at Nudari about 18,000 were relieved in seven days. I shall be able hereafter to give an account of the whole number relieved at each Depôt from the supplies sent.

30. All the Gomastabs have orders to send in their reports to me at Diamond Harbour, and to repair thither themselves whenever their stores are exhausted. The accounts of stores and cash with which I was supplied before I started by the Secretary to the Committee will be sent in as soon as they can be properly written up.

31. I have only in conclusion to observe that my thanks are due to Captain Williamson, of the Steam-ship *Tessia*, and Captain Spain, of the Steam-ship *Francois Gordon*, and to most of their Officers, for the ready assistance which they rendered me throughout the expedition. To the useful aid received from Mr. Thompson, of the *Suisse*, I have already alluded. It is scarcely necessary for me to make special mention of the energy and zeal with which the Revd. Mr. Payne has joined in the work. But for his help I could not have done in the same time above half the work which has actually been performed.

From D. J. McNEILY, Esq., Joint Magistrate, on Special Duty, to the Secretary, Cyclone Relief Fund.—(No. 9, dated the 16th November 1864.)

I have the honor to inform you that I left Calcutta on the 8th instant, taking with me stores, as per subjoined list, for the relief of the inhabitants along the banks of the river below Atoheepore. I made special inquiries at each of the Depôts of distribution to ascertain the character and extent of the relief still required by the inhabitants of the neighbourhood and regulated the supply accordingly.

2. Depôts have been established, as I have previously reported to the Commissioner of Nuddea, at the following places:—

*On the East Bank.*

Moyapore.  
Nudari.  
Fulta.  
Noorpore.  
Diamond Harbour.  
Culpea.  
Rampurfulla.  
Sangor.

*On the West Bank.*

Dhaja.  
Fort Mornington (or Makrapata.)  
Paroalpara (Roopnarain.)  
Kookrahatee.  
Diamond Point.  
Ballighatta (Huldes River.)  
Kedgeree.  
Dowripore.

Of the Stations on the eastern side of the river Moyapore, in my opinion, requires no further assistance in the shape of supplies of food. At all the remaining Stations, except Noorpore and Sangor, I have already stopped the supply of food to all able-bodied men. At Noorpore the same rule will be almost immediately brought into force. Sangor must still be almost entirely dependent on gratuitous assistance for a long period.

3. I have been able thus to limit the distribution on the eastern bank, partly because in some places the repairs of the embankments have been commenced by the Officers of the Public Works

Department, but mainly because able-bodied men have now almost everywhere the opportunity of earning nearly double the wages which are given by the Public Works Department. The wealthier inhabitants, whose houses were destroyed by the storm, are now in very many places giving from four to six annas a day to the labourers whom they have employed to re-build them, and the result is that there is an unsatisfied demand for labour on the embankments, where it is paid for at the rate of about 2½ annas per diem. Still there is distress; for the price of commodities at the hâts is high, the actual quantity exposed for sale is as yet insufficient, and the quality of a large proportion very bad. At the same time, therefore, that I have withdrawn all direct assistance in the form of food from those who are able to work, I have thought it well to double the daily supply to invalids, women, and children.

4. One main object I have had in view in directing this change has been to make some provision for the relief of those who are unable, through age, sickness, or other unavoidable cause, to come daily in person to the Depôts. Until lately only those who came in person received relief, and those only at the rate of half a seer of rice each, and other kinds of food in smaller quantities, i. e. just sufficient for their own consumption. For a while the demand for relief was so great that even on this restricted system hundreds, in many instances thousands, of people were fed daily at one Depôt, and it was hardly possible to keep the Depôts fully supplied; and very many must have altogether failed to benefit by the distribution. Now, wherever able-bodied men are struck off the list of applicants, the reason for the restriction has disappeared, and I believe that, by the system of granting double rations to those applicants who are still fit subjects for charity, the distribution of necessary relief will be much more generally and effectively carried out than previously. It was proposed, indeed, to increase the supplies given to the extent of allowing whole bales to be carried away. But the strong probability of the stores being forthwith sold at high rates by the individuals who were fortunate enough to get them was a sufficiently obvious objection to such a course, an objection not without weight even where all the residents were of the poorer class, and most cogent where the community was held, (as in many parts, especially on the west bank, it is held,) under the influence of a few powerful individuals and other many retainers. I may add that wherever I announced to the people the double change I intended to make, the arrangement seemed to give general satisfaction. They appeared to recognize the justness of the restriction imposed as to the number of the recipients, and to be pleased with the augmentation in the quantity of food to be supplied to each applicant.

5. Of the Stations on the western bank Dhnja, Fort Mornington, and Paroalpara will require continued relief on the old plan for two or three weeks more. No work is procurable at present either upon the embankments or elsewhere, and men must still be supplied, as well as women and children. I have not thought it necessary to increase the rations at these places. Kookrahatee, Diamond Point, and Ballighatta are three salient points of the tract which lies between the Roopnarain and Huldes Rivers. The whole of this tract was fearfully swept by the sea, and

the damage done was very great. No work is as yet procurable there, and relief is still administered without distinction of age or sex. I found the distress here still so great, a great aggravation having been caused by the universal consumption of the rotten rice, which has been and is being distributed and sold in large quantities, and which has produced much sickness among the people, that I ordered the double rations to be given to every one, and left considerable supplies to meet the increased demand to be expected in consequence.

6. Kedgeres also I found still in urgent need of assistance. No work is to be had, and the large supply which I had left on the occasion of my first expedition had been exhausted two or three days before. I ordered the double rations here also, and left a whole boat load of provisions at the Depôt.

7. At Dowlatpore, on the Hidgeloo River, matters are in a more promising condition. The inhabitants have not lost so much of their property as their neighbours to the northward. One great cause of this is that the sand hills all along the Hidgeloo coast, the level of many of which is much higher than that which was reached by the storm wave, afforded a number of places of refuge for both human beings and cattle. Another cause, one which also tended greatly to diminish the destructive effect of the inundation upon the crops, has been brought to my notice by Mr. O'Flaherty, the Executive Engineer at Coatal, and it is a cause well worth attention.

8. From a circumstance that characterized the late gale, (in common with all circular storms in the northern hemisphere,) the circumstance that the course of the wind within the circle of the storm lay from east to north, and so round to west, and south, while the general course of the storm was northward, it came to pass that along the west bank of the river the first rush of the gale was felt from the eastward. This blast brought up the sea wave. But after a short time it was succeeded by the reverse gale from the westward, which forced the great mass of the salt water back across the embankments into the river, so that in some places the crops were not submerged by salt water for above an hour. On the east bank, on the contrary, the storm commenced with a land wind, and the sea wave rolled in before the return blast from the westward, after which the storm passed on and left the country flooded with water, which has not yet been entirely removed by drainage and evaporation. At a certain distance from the open sea the configuration of the river banks probably so affected the course of the storm wave that the same alternate eastward and westward movement was not so marked. At any rate above the Huldee I have observed no corresponding distinction in the amount of damage inflicted upon the crops on either side.

9. I expect to find, on the occasion of my next visit to Dowlatpore, that gratuitous supplies of food to the people in that neighbourhood may be altogether discontinued. But I have learned that it will be necessary to send supplies to two places at some distance inland and to the westward of Dowlatpore. The effect of the gale in those parts which are traversed by the Puttermohun and Sankarpoor Khalls was to dam up the river water from the southward and to inundate the country with fresh water. The crops have not

been fatally damaged, but much present distress has been produced by the loss of other property. I propose to establish distributing Depôts at Olalpore and Rammugger. Mr. O'Flaherty has kindly undertaken to take charge of the stores on their arrival in boats at places, but slightly removed from the points indicated. For these Depôts, and for the further supply of others which I think it is necessary to keep up, I will shortly submit separate applications to the Committee.

10. Sangor will be dependent on charitable relief for many weeks, if not months, to come. There is a considerable store there at present, and as the actual number of survivors in the whole island does not exceed 1,500, no further provisions need be sent there until the beginning of next month.

11. With reference to the want of articles other than food, I beg to state that at every place I have visited I have been met with an universal cry for clothing. Many seem to have sufficient to meet their absolute necessities; but I am convinced that the Committee could not confer a boon that would be more eagerly accepted at every place from Atchopore downwards than the distribution of large quantities of the cotton cloth of which I have up to date carried down some 24,000 yards, a quantity sufficient to clothe only a small proportion of the whole distressed population. I do not say that this relief is indispensable, but I venture to express my opinion that a measure which would so greatly contribute to the comfort of so many for whom charitable contributions have been made would be a suitable one for adoption by the Committee. Blankets are not generally asked for, because the people prefer making wadded quilts for themselves to serve as coverings at night. But as the weather grows colder they will be thankfully used, for the materials for quilts will not be at hand in sufficient quantities.

12. In some places string and implements for house building are much wanted. It will not be necessary to send bamboo or timber, but "daos" (small hatchets) and kodals (spades) are in great request. Ploughs have been lost in great numbers, but it seems to be admitted that they can be made in most places by artificers on the spot.

13. The difficulty of procuring fresh water will very shortly become most pressing. Efforts are being made, with some success, to induce the people along the eastern bank to bail out the tanks which have been spoiled by the salt water. On the western side I have failed to rouse the inhabitants sufficiently to get any such works undertaken. At Diamond Point indeed and at Kokrahates I managed to elicit a promise from some of the people to commence the work, the labourers receiving extra supplies from the Depôt; but I almost fear that I shall find their energy to have been coeval with the length of my visit. I think that, for this one purpose, the Committee might advantageously sanction money payments at rates not less than those adopted by the Public Works Department to labourers. Special Overseers must be employed and special accounts kept if this plan be adopted. But I think that the occasion calls for special exertion, and whatever is done should be done without delay.

14. In conclusion I beg to add that fresh supplies need not be sent to any of the existing Depôts for eight or ten days from this time.

*List of Stores taken.*

Rice	...	...	...	4,000 Maunds.
Dall	...	...	...	1,000 "
Oil	...	...	...	210 "
Salt	...	...	...	70 "
Cloth	...	...	...	20,000 Yards.

Also a small consignment of kodals, kateries, and string.

From D. J. McNEILLY, Esq., Joint Magistrate, on Special Duty, to H. W. I. Wood, Esq., Secretary, Cyclone Relief Fund, —(No. 10A., dated the 17th November 1864.)

\* With reference to that part of my report of yesterday's date in which I alluded to the demand for charitable relief in the interior of Hidgeloo, I have the honor to apply for the following stores to be immediately dispatched in Cargo Boats to the Villages of Olalporo and Raminugger.

Gomastalus will accompany the Boats to take charge of the new Depôts, and they will be assisted in taking them down by two Chupprassies of the Public Works Department sent for the purpose by Mr. C'Flaherty, the Executive Engineer of Contai.

Mr. O'Flaherty will himself receive the Boats when they reach their destination.

*List of Stores required.*

Rice	...	...	1,000 Maunds.
Dall	...	...	250 "
Salt	...	...	20 "
Oil	...	...	50 "

To be equally divided and shipped in two Cargo Boats.

Also 200 pieces—8,000 yards grey cloth.

From D. J. McNEILLY, Esq., Joint Magistrate, on Special Duty, to the Secretary to the Relief Fund Committee, —(No. 13, dated the 8th November 1864.)

With reference to paragraph 11 of my letter No. 9 of the 16th instant, I have the honor, herewith, to submit an application to the Committee to supply me immediately with (60) sixty bales of Madapolams to be distributed from the sixteen Depôts established along the river banks, two inland Depôts in the neighbourhood of Diamond Harbour, and two, which will be immediately formed, in the interior of Hidgeloo.





# SUPPLEMENT TO The Calcutta Gazette.

WEDNESDAY, FEBRUARY 22, 1865.

## OFFICIAL PAPERS.

A SUPPLEMENT to the GAZETTE will henceforward be published, containing such Official Papers and Information as the Government of Bengal may deem to be of interest to the Public, and such as may usefully be made known.

Non-Subscribers to the GAZETTE may receive the SUPPLEMENT separately on a payment of six Rupees per annum if delivered in Calcutta, or twelve Rupees if sent by Post.

No Official Orders or Notifications, the publication of which in the GAZETTE is required by Law, or which it has been customary to publish in the GAZETTE, will be included in the SUPPLEMENT. For such Orders and Notifications the body of the GAZETTE must be looked to as heretofore.

### Further Report of Measures taken for checking the progress of Epidemic Cholera in 24-Pergunnah and Midnapore.

From D. J. MCNAUL, Esq., Joint Magistrate, on Special Duty, to the Secretary to the Government of Bengal,—  
(No. 58, dated the 4th February 1865.)

I HAVE the honor to submit the following report in continuation of my letter No. 48 of the 24th ultimo.

2. At the time when that letter was dispatched Dr. Bow was about to traverse the country north of the Russoolpore River and east of the Contai and Tumlook road; Dr. Switzer had just started on a tour round the sea coast westward from Contai; and I was on my way to Nugwan to ascertain the state of affairs to the westward of that place.

3. To the north-west, west, and immediately south-west of Nugwan there is no cholera. Nugwan itself seems to be the furthest point to the westward which it has reached. I was perfectly satisfied from the inquiries I made that it was quite unnecessary for me to continue my march, as I had intended, on to Jellasore. I therefore turned south-westward, and arrived on the 1st instant at Bograi, near the mouth of the Subanreeka River, where I met Dr. Switzer, who had just reached the same point. I made constant inquiries on the road but found no cholera between Nugwan and Bograi.

4. Dr. Switzer's report, herewith enclosed, shews that his route has led him through a very differently circumstanced tract of country. The disease was most severe in the neighbourhood of Ramnugger, immediately to the north of Beereool (Daegah), and prevailing to a somewhat less extent throughout the country lying between that place and Contai. To the west of Ramnugger he

found it rapidly decreasing as he proceeded, and at Bograi he found it had entirely disappeared.

5. The fact is that the tract affected by the epidemic in Hidgeloo is (speaking in a general way) conterminous with that within which are found what are called the "Jalpaie" lands, i.e. the lands traversed by arms of the sea and tidal rivers and streams. Beyond the limits of this tract there is scarcely a case of cholera to be found.

6. Even within this tract I am glad to be able to report, on the authority of the enclosed letter from Dr. Switzer, a great diminution of sickness. At Ramnugger, the place where it was most violent, the cases treated have fallen from 125 with forty-one deaths between the 14th and 21st ultimo, to forty-five cases and seventeen deaths in the succeeding week. At Rantree, Dowlaah, and Neemdosbar, between Ramnugger and Contai, Dr. Switzer reports a similar abatement of disease.

7. We are now re-tracing his steps along the sea-shore, and hope to find much fresh improvement throughout the whole tract lying between us and Contai.

8. From Dr. Bow I have as yet received only a demi-official note since the date of my last letter. He has found some, but no very great amount of present sickness in the Pergunnah of Erinch. He has accordingly deputed the Doctor previously stationed at Hurriah, on the borders of that Pergunnah, a few miles further to the eastward. He will report at length when he has received the necessary Returns from the Doctors he left further to the northward.

9. I hope to be able soon to submit an Abstract Tabular Statement, shewing the actual results of operations up to the 31st ultimo; but the difficulty of procuring regular Returns from the Native Doctors, and the great delay which occurs in the transmission of letters through this inaccessible part of the country, especially when their

destination is a moving camp, leave me without the data for such a Return at present. Still greater delay apparently takes place in the dispatch of Returns from Howrah, Diamond Harbour, and Barripore. None have been as yet received from the Local Officers at any of those places. I have specially drawn their attention to the matter.

\* 10. In conclusion I have only to add that two of the men employed by me in Hidgellee to distribute medicines (the two alluded to in my first report as being without medical knowledge) have been discharged. The services of others, I doubt not, may also be shortly dispensed with.

From B. W. SWITZER, Esq., M. D., F. R. C. S., Assistant Surgeon, on Special Duty, to D. J. McNAUL, Esq., on Special Duty.—(No. 3, dated the 4th February 1865.)

In succession to my letter of the 24th ultimo, I have further to report my progress through the Hidgellee District.

2. Having met both you and Dr. Bow at Contai on the 25th ultimo, and arranged with you the route I should take, I received over a further supply of Cholera Medicines, Rum, Mustard, &c., and an increase to my Staff of four Native Doctors just arrived from Calcutta. In addition, with your sanction, I entertained a pensioned Native Doctor, an old Government Servant, whose experience would doubtless make him useful. These men were disposed of in the following way:—One to Nungwan to await your arrival there and place himself under your orders. A second to Neemdosbar. A third to Bograi. The remaining two accompanied me to be placed as circumstances might point out.

3. I again left Contai on the morning of the 26th, going to Dowleah *viz.* Rontra I had been told the disease was bad there, but did not find the report confirmed. There had been some cases, but it was now on the decline. From the proximity of this place to Contai and Neemdosbar I did not consider there was any necessity for leaving a Native Doctor. At Dowleah I found the disease still prevailing, but on the decrease. Next day I returned towards Contai to Neemdosbar, where I had stationed the pensioned Native Doctor. Here the same satisfactory intelligence awaited me that the disease was on the wane. Returning to Dowleah I had several renewed applications for medicine. From the Village of Dukinseetta an intelligent ryot came for medicine, and told me in his place, with a population of 350, twenty-four had died and eight or ten were still suffering. I supplied him with medicines, and directed him how to procure further aid if necessary. The Sub-Oyseer in the Public Works Department stationed at Dowleah told me the disease was bad at Deegah. I accordingly detached one of the Native Doctors who accompanied me to that place. Before I left Dowleah a Hindoo Village Doctor applied to me for medicines, stating cholera was prevalent at Sooka Nundleepore. I gave him some, cautioning him to distribute it gratuitously and not sell it. It is not likely he will mind this, but if he succeeds in distributing it even by sale the end of saving life will be answered.

4. On the morning of the 28th I marched for Ramnugger, from which place I always had bad reports. While walking along the road and looking at the many small black mounds of ashes which so well told their tale, I heard piercing shrieks from a small ruined hut close to the track, such as I knew could only come from severe bodily

pain, and going to ascertain the cause I found a poor woman bearing as best she might 'Eve's curse.' She had been two days in labor, and the old cronies about her had made up their minds that something was wrong. I found there was malposition of the child's head, which having remedied, I delivered her of a healthy male infant. Arriving in Ramnugger in the evening I found, from the reports of my Native Doctor, that this was the place where cholera had been worst. The first week, from the 14th to the 21st ultimo, he had treated 125 cases with a result of forty-one deaths. During the next week, from the 21st to 28th, forty-five occurred and seventeen died. I personally saw five cases while in Camp there. In one the result was fatal. On the 30th, leaving my tent standing at Ramnugger, I went to Deegah, where there is a bungalow belonging to the Public Works Department. This place is close to the sea-shore and ought to be made the 'Brighton' of Calcutta. Twenty miles of a long sandy beach stretches away where the waves from the Bay roll up to the feet. The air is bracing and cool, and the situation such as ought to be taken advantage of. A few thousand Rupees spent in the construction of bungalows and roads and planting trees would make the little place delightful and a most healthful sanitarium for the Calcutta folks. Before I saw it I fancied no such place could exist within 500 miles of Calcutta without being eagerly seized upon. My journey here, however, was not attended with much success as far as treating cholera went, for the people were all much disinclined to use European medicines. I believe there were cases of the disease not far off, but the people denied it, as I believe, fearing I would insist on their taking the medicines. The Native Doctor had seen one or two cases, but had not been allowed to treat them. I at once transferred him to Kukra, a village about six miles distant, situated in the midst of jungle on the road from Ramnugger to Bograi, as I heard a rumour of the disease being there. I returned to my Camp at the former place the same evening, and next morning, before marching for Bograi, seventeen miles distant, I had the pleasure of meeting Lieutenant-Colonel Short, R. E., Superintending Engineer, and Mr. J. O'Flaherty, Executive Engineer, on their tour of inspection. On my way to Bograi I passed through Kukra and found the Native Doctor there. He had seen a few cases, but was about to transfer himself to a village a few miles distant, where it was worse. Returning then to Kukra I had six applications on the road to Bograi and distributed the medicines. From two villages especially, *viz.* Oonskons and Tarapore, men were very anxious to obtain them. Arriving at Bograi I found the disease had quite left for many days and had never been very bad. The Native Doctor I consequently changed to Dowleah.

5. On the 1st instant I met you at Bograi, since which time we have continued together purposing to take the immediate coast line on our return from Rancoota.

\* 6. No Returns from Native Doctors are appended to this letter, as I will not be able to get them until my arrival in Contai, where they await me. I have no doubt, however, that the disease is now on the decline everywhere, but still sufficient cases occur in various places to render it advisable that the Native Doctors should not be too quickly withdrawn from their posts.

7. I have had many opportunities of relieving poor villagers suffering from minor surgical diseases, such as abscess, ulcers, wounds, &c., and have seen many instances of nature's rough surgery in badly united fractures, stiff joints after unreduced dislocations, and limbs permanently contracted from the cicatrices of burns. Cases demanding amputation of a limb and one for the removal of stone from the bladder. I have also seen the latter. I have sent into Contai and endeavoured to procure instruments from Midnapore to relieve him. But the poor people everywhere came in numbers mostly presenting the incurable results of what originally was a curable disease. I have seen hundreds of blind, half lame, paralytic, and deformed, which shews, in the interior of a District there must be a large amount of unrelieved suffering humanity.

#### Papers relating to recent complaints of Railway mismanagement.

From COLONEL R. STRACHEY, B. E., Secretary to the Government of India, Public Works Department to the Joint Secretary to the Government of Bengal, Public Works Department, Railway Branch.—(No. 5008, dated the 16th December 1864.)

I AM directed to invite attention to a letter signed "Bepari" which appeared in the *Indian Daily News* of the 13th instant, complaining of the detention of goods at Stations on the East Indian Railway, and to request that you will, with the permission of the Hon'ble the Lieutenant-Governor, desire the Consulting Engineer to ascertain and report whether any serious delay habitually occurs in the transmission of goods for the several Stations along the line, and whether any check on the despatch of goods, and any record of the delay in their reaching their destination, is kept.

2. I am also to request that a special report may be submitted as to the present state of the Rolling Stock and the quantity constructed during the last two years.

3. The information asked for in this letter is desired with all practicable despatch.

From COLONEL R. STRACHEY, B. E., Secretary to the Government of India, Public Works Department, to the Joint Secretary to the Government of Bengal, Public Works Department, Railway Branch.—(No. 5009, dated the 16th December 1864.)

I AM directed to invite attention to a letter signed "Gamma" which appeared in the *Englishman* Newspaper of the 3rd December, and to an extract from the *Delhi Gazette* under the Provincial Columns of the *Indian Daily News* of the 10th idem, on the subject of the overcrowding of third class carriages on the East Indian Railway. The letter in the *Englishman* is very moderate in tone and circumstantial as to details, and otherwise bears *prima facie* evidence of being a correct statement of facts.

2. I am to request that you will, with the permission of the Hon'ble the Lieutenant-Governor, cause immediate enquiry to be made in the matter, so as to ascertain, if possible, the correctness of the statements made.

3. I am also to invite attention to the Editorial in the issue of the *Indian Daily News* above-quoted, noticing the way in which the troops going up-country on a recent occasion were crowded in the train, in order that this matter also may be enquired into.

4. In conclusion I am to take this opportunity of requesting early attention to Public Works Department Circular No. 13R., dated 26th August 1864.

From the Joint Secretary to the Government of Bengal, Public Works Department, Railway Branch, to the Secretary to the Government of India, Public Works Department,—(No. 160G., dated the 13th February 1865.)

I AM instructed by His Honor the Lieutenant Governor to acknowledge the receipt of your letters Nos. 5008 and 5009, dated 15th December 1864, inviting attention to certain letters of complaint which have appeared in Newspapers and to state the action taken on the reference with His Honor's conclusions on the cases themselves.

The letters were received in this Office on the 20th December, and were laid before the Railway Officers at an Official Meeting on the 22nd December, when the following Resolution was recorded :—

No 351.—RESOLVED that the Traffic Manager be directed to enquire into and report on the cases referred to by the Government of India, and to give his careful attention to the matters brought to notice affecting the working of his Department; also, that the Locomotive and Carriage and Wagon Superintendents submit a joint report upon the present condition of the Engine and Carriage Stock for transmission to Government.

(Sd.) J. HOVENDEN, Major, M.C.  
EDWARD PALMER.

2. The Traffic Manager's report, dated 23rd January, was received in the Consulting Engineer's Office on the 9th February, and was submitted, through the Deputy Consulting Engineer and Inspector, for His Honor's orders on the 10th February.

3. A copy of the report is annexed.

4. A Statement of Rolling Stock erected and constructed during the last two years is also annexed.

5. His Honor regrets the delay that has occurred in dealing with these references and has ordered that in future the Deputy Consulting Engineer and Inspector must avail himself of such information as may be immediately forthcoming and reply at once to all specific complaints reaching him which are duly authenticated.

6. The rules laid down for his guidance\* provide for the submission of a quarterly Schedule of such complaints, and his conclusions thereon will be noted for general information.

7. His Honor considers the Traffic Manager's reply to "Bepari's" letter quite satisfactory. A special service to meet the sudden demand occasioned by an anticipated famine in the North-West Provinces was organised with promptitude and vigor.

8. As respects Rolling Stock, the construction of covered goods wagons has not been able to keep pace with the rapid expansion of traffic on the Lower Division since the opening of the line

to the Jumna at Allahabad, but very great credit is due to the Carriage and Wagon Superintendent for the work he has turned out during the last two years. The workshop buildings are being extended and are already in a position to turn out from 80 to 100 vehicles per mensem.

9. The Locomotive Stock is also being rapidly re-enforced from England, forty new Locomotives being expected this year.

10. His Honor considers that the remarks of Mr. Batchelor, in reply to "Gamma," are very just, and as respects the specific complaint satisfactory; but great blame is frequently due to the Company's Officers for thrusting third class passengers into full carriages in spite of remonstrance.

11. It must, however, be allowed that the third class passenger traffic is very variable and is affected by causes which cannot be anticipated by the Traffic Department, so that frequently either the carriages must be overcrowded or passengers left behind, for on a single line a special train cannot be improvised without danger, and the delay involved in putting on other carriages at the last moment, even at Stations where there are spare ones, is not without risk. Still much may be done to mitigate the evil, and the special attention of the Deputy Consulting Engineer will be directed to this point.

12. The alteration in the interior arrangements of the third class carriages alluded to by Mr. Batchelor is a great improvement, and the question of further improvement is now engrossing the attention of the Consulting Engineer.

13. With reference to the carriage of troops no complaints have been received from the Quartermaster General's Department, but the Deputy Consulting Engineer has been requested to place himself in communication with the Office at the Presidency.

14. In conclusion I am directed to inform you that Major Novenden, Deputy Consulting Engineer and Inspector, is now on a tour of inspection, and on receipt of his first report I am again to address you on the general subject of traffic arrangements.

From W. ALLEN, Esq., for Traffic Manager, to EDWARD PALMER, Esq., Agent, East Indian Railway Company, (No. 276, dated the 23rd January 1865.)

In reply to the correspondence enumerated in the margin, I have read the extracts and papers referred to. The specific points to reply to appear to be five, viz.,—

*In letter No. 800.*

1st.—"Bepari's" letter in *Indian Daily News* of 13th December, as to delay of goods and goods waiting for want of wagons in Rampore District.

2nd.—As to the amount of Rolling Stock and quantity constructed during last two years.

*In letter No. 801.*

3rd.—"Gamma's" letter in *Englishman* of 3rd December, as to overcrowding of third class carriages in the Patna District generally, and more particularly on the given date of 17th November.

4th.—Extract from *Delhi Gazette* in *Indian Daily News* of 10th December as to overcrowding of troops and third-class passengers generally.

5th.—The editorial remarks in *Indian Daily News* of 10th December, generally charging the Railway Company with inconveniently crowding troops travelling by rail.

In reply to the 1st—Bepari's letter—I beg to say, to a certain extent the letter is correct as regards there having been at that time a considerable accumulation of goods in the Rampore District, but it is not correct in stating our trains were running light at that time. The heavy traffic in rice and grain, it must be borne in mind, only lasts about two to three months after the crops are gathered, and the whole produce of a large District finds its way to a Station, when at all other times of the year there is little or no traffic. But, so far from this traffic not having attention the reverse was the case, and in addition to the regular trains a Rampore goods train was put on, and special trains were run nearly daily, third class carriages and ballast wagons being enlisted into the traffic service. This traffic is now over, or nearly so, and these trains are withdrawn.

As regards the 2nd point—the Rolling Stock—there has been constructed during the years 1863 and 1864, 677 covered goods wagons, and 79 open-sided, and there remains 100 covered goods wagons of the number sanctioned yet to be delivered to us. This is sufficient to meet the average traffic, but not the sudden demand at exceptional times, though it must not be forgotten that if the Jumna Bridge was finished, and our stock could work through, the present delays would be avoided, and the working availability of the stock would be increased, I should say, but little short of twenty per cent.

In reply to the 3rd point—"Gamma's" letter—I beg to say that every endeavor is used to prevent the crowding of the carriages, but it is not always possible to do so on occasions of native holidays, pilgrimages, or other festivals. This subject has had much attention, and the remarks I made in my letter of 28th July 1861 as follows still apply:—

"I have often watched a crowd and observed that neither age, sex, or bodily infirmity meets with the slightest consideration, and this frequently on occasions when they have been told, and it is known, other trains will follow. I have also often had to use positive force to remove passengers from the carriages into which they had forced themselves in spite of our Regulations, and yet without any opposition on the part of their fellow passengers."

On the particular occasion referred to, viz. the 17th November last, I have had the third class passengers by the train referred to abstracted, and I find the total number of passengers in the train on leaving Patna were 208, 167 having alighted between Megulserai and Patna. The train had throughout six third class carriages on, and the largest number of passengers in the train at any one time during its journey was 220, or nearly 100 less than the complement allowed by Regulations, so that the crowding, if it did occur, must have arisen from a large party following each other into one carriage.

Our new third class carriages, built in divided compartments, will, to a great extent, prevent this overcrowding, and render it easier for the Officers of the Company to watch and check this practice.

The 4th point is partly answered under the last remarks; but as regards native troops, I may

remark, that as they are always accompanied by their Officers, and nearly always dispatched under the personal supervision of an Officer of the Quarter-Master General's Department, complaints would have been made if the statement made was a correct one.

The fifth point is also met by the above, and, in the absence of complaints from the Officers entrusted with these arrangements, may, I think, be considered as incorrect.

Three Newspapers herewith returned.

**STATEMENT of Rolling Stock turned out of the Howrah Workshops during the years 1863 and 1864.**

	Vehicles of Sorts.	Or per month.
During the first half of 1863	234	375
During the second half of 1863	201	305
During the first half of 1864	194	2833
During the second half of 1864	423	7066
Total number of Vehicles turned out during two years	1,052	

(Sd.) F. S. TAYLOR, Capt., R. E.,  
Joint Secy to the Govt. of Bengal.

**STATEMENT of Locomotives on hand and erected  
during the years 1863 and 1864.**

	Passengers	Goods	Total
Engines erected during the years 1863 and 1864, Lower Division	30	68	104
Engines erected during the years 1863 and 1864, Upper Division	6	9	15
Total	42	77	139

(Sd.) F. S. TAYLOR, Capt., R. E.,  
Joint Secy. to the Govt. of Bengal.

From the Joint Secretary to the Government of Bengal, Public Works Department, Railway Branch, to the Secretary to the Government of India, Public Works Department.—(No. 104G, dated the 26th January 1865.)

I AM instructed to acknowledge the receipt of your Circular No. 18 of 1864, dated 27th August 1864, calling attention to certain points relating to the administration of Railways.

2. A Sanitary Committee had been appointed, under instructions conveyed in Resolution of the Government of India No. 128 of 11th April, prior to the receipt of the Circular letter under reply, the Chief Engineer of the Railway being associated with the Government Officers on this Committee to secure the co-operation of the Company and with a view to speedy action.

3. The valuable Report of this Committee touches on many of the points alluded to in your Circular under reply, and a copy was forwarded, with this Office No. 1589G, dated 12th December, for the information of the Government of India.

4. The whole subject has since been carefully discussed at an Official Meeting between the Consulting Engineer and the Agent of the East Indian Railway Company, and their conclusions are embodied in the Minutes of the Meeting annexed.

5. The Lieutenant-Governor is satisfied that the Railway Agents are ready to do all in their power to secure the safety and comfort of the travelling public; but unless strict discipline is enforced among the Railway subordinates, no administrative measures will have effect. His Honor is in hopes that the appointment of the Deputy Consulting Engineer as Inspector will do much towards improving the traffic arrangements, and recommends that a reasonable time may be given to allow of this influence taking effect before resorting to more stringent measures.

6. The duties devolving on the Inspector are detailed in the annexed Memorandum, and Major J. Hovenden, Deputy Consulting Engineer, has been directed to take up these duties from 1st January 1865, he having been now relieved from Office duties by the arrival of Captain de Bourbel.

**DUTIES OF THE GOVERNMENT INSPECTOR.**

The Deputy Consulting Engineer intrusted with the duties of Inspector will make a quarterly inspection report for publication in the *Government Gazette*, noticing in general terms the grade of the way and works, and the manner in which the traffic, both in goods and passengers, has been conducted; with a diary of his various journeys.

The report should be submitted under the following heads:—

1. The maintenance of the line, and the general condition of the road, fencing, and Station buildings.

2. The quality and sufficiency of water and fuel supply.

3. The state of the public accommodation at the Stations, and of the sanitary arrangements.

4. The discipline of the Station and Train establishments.

5. Specific complaints laid before Government, noting the action taken on them by the Inspector and the Railway Officers.

6. The working of the Trains, with special reference to punctuality.

7. The condition of the Rolling Stock, and its fitness and sufficiency for carrying the traffic offered.

8. The maximum detention of goods at the Termini and principal Stations.

9. The quantity of goods carried to and from the principal Stations, mentioning the chief staples.

10. An abstract of accidents, with description of serious cases, noting the orders of Government, or the Judicial Authorities, and the action taken thereon.

F. S. TAYLOR, Captain, R. E.,  
Joint Secy. to Govt. of Bengal,  
P. W. D., Railway Branch.

FORT WILLIAM,  
The 26th January 1865. }

## No. 4.

## EAST INDIAN RAILWAY.

*Minutes of a Special Meeting held at the Agents' Office on Wednesday 25th January 1865.*

## PRESENT:

CAPTAIN F. S. TAYLOR, R. E., Consulting Engineer.  
MR. E. PALMER, Agent.

" C. STEPHENSON, Deputy Agent.

Read Report of a Committee appointed by His Honor the Lieutenant-Governor on the Sanitary condition of Railway Stations.

The subjects dwelt upon by the Committee divide themselves into two distinct heads,—

1st.—Conveniences required by the public using the Rail.

2nd.—Conveniences which it is necessary or desirable that the Company should provide for the health and recreation of their own servants.

65. RESOLVED, for the public convenience—

1st.—That the Chief Engineer be called upon to

Bhowali.  
Burdwan.  
Raniganj.  
Nathia.  
Tengnafar Junction.  
Bulidanga.  
Jumalpore.  
Akhola.  
Dinapore.  
Burac.

prepare plans and estimates for constructing privies and urinaries, on the plan recommended by the Committee, at the changing and junction Stations named in the margin. This accommodation is designed for through travellers principally. The doors of all carriages will be unlocked immediately on the halting of a train at these Stations, and measures will be taken to bring the necessities into regular use.

2nd.—That the Chief Engineer be called upon to prepare Plan and Estimate of an open Rest House for Native Travellers arriving or departing by train at populous places, with suitable privy accommodation, to be erected in the rear of, but contiguous to, the Station building on the Company's premises. The Consulting Engineer will call upon the Civil Authorities to state at what Stations such buildings are required, and a reference will be made to the Lieutenant-Governor before settling in what proportions the cost of these buildings will be defrayed by Government and the Railway Company.—(See paragraph 4, Circular from Government of India, No. 13 of 1864.)

3rd.—That the Traffic Manager be called upon to Draft Rules, fixing the responsibility of Station Masters or others for visiting and reporting the state of the public necessities and Station premises generally; for inspecting the uniform of officials; and for reporting any neglect on the part of the Train Guards in taking up or setting down passengers.

4th.—With reference to the recommendation by the Committee,—that special privy accommodation be provided for troops,—that Major Hovenden be requested to place himself in communication with the Quarter-Master General's Department for further consideration of this subject.

46. RESOLVED further, for the health and recreation of the Company's servants,—

1st.—That the Chief Engineer be requested to prepare Plans and Estimates of suitable Necessaries on the standard plan, to be constructed contiguous to the Locomotive running sheds and workshops, wherever such accommodation is now defective.

2nd.—That the Chief Engineer be requested to prepare a Plan and Estimate of a suitable Institute building, capable of extension, to include School, Library, and Coffee Rooms, and also of a Swimming Bath, Ball Court, and Skittle Alley. A building for the above uses will be put in hand at the Stations of Rampore Haut, Jumalpore, and Dinapore, and a Swimming Bath will be constructed at Jumalpore as a tentative measure.

3rd.—That the attention of the Engineering and Traffic Departments be specially called to the minor matters of conservancy, drainage, and cleanliness alluded to in the report of the Sanitary Committee, and that they be directed to prepare Estimates of any further expenditure which they deem necessary for carrying out minor matters of sanitation.

EDWARD PALMER,

Agent.

F. S. TAYLOR, Captain, R. E.,  
Consulting Engineer.

**Report of the Cultivation of Cinchona  
at Darjeeling during the Month  
of January 1865.**

From T. ANDERSON, Esq., M. D., Superintendent of the Botanic Garden, and in charge of Cinchona cultivation in Bengal, to S. C. BAXLEY, Esq., Junior Secretary to the Government of Bengal,—(No. 59, dated the 13th February 1865.)

I HAVE the honor to submit the first of a series of monthly reports on the cultivation of Cinchona at Darjeeling. These monthly reports will contain, besides the account of the operations of the past month, a Tabular Statement of the growth of certain carefully measured plants of different species of Cinchona grown in the ground, in the open air, without shelter of any kind, in five plantations which have been formed at different elevations above the sea.

At the time of the submission of the last report on the cultivation of Cinchona, dated 15th July, 1864, the cultivation was carried on in conservatories and in glazed frames at Lebong. The success attending the small open air plantation at Rungbee, the formation of which was fully detailed in the last paragraphs of that report, induced me, in November and December, to remove all the Cinchona plants from Lebong to Rungbee. After the removal of the plants to Rungbee, the frames at Lebong, about forty in number, were also taken to Rungbee and were filled with the smallest plants, while all the lately rooted cuttings, but which were still in pots, were transferred to open air beds formed in parallel lines on a gentle slope. The plants were placed nine in a row at six inches between each plant, each bed being about 200 feet long.

Three such beds were filled with young plants of *Cinchona Officinalis* by the 15th of December. It was found better to remove all shade from the plants and to expose them fully night and day. The plants in these beds will be grown to yield cuttings. It is intended to keep 20,000 plants of each species for this purpose. After this number of stock-plants has been completed, all plants produced will be placed for a short time in beds situated near the ground to be permanently planted. After remaining two or three months in these beds, or until they are 12 inches high,

the plants will be placed in the permanent bark-yielding plantations at a fixed distance from each other, probably 5 feet apart.

The Statement of the number of plants shews that, as 19,329 plants of *Cinchona Officinalis* exist at Rungbee, the number of stock-plants of that species has been almost attained. The number will be completed in a week or two. These stock-plants will be allowed to grow for some time before cuttings are taken from them to form bark-yielding plants, as I am convinced that it is better to wait a short time for vigorous shoots than to swell up the Monthly Return by weak ill-formed cuttings, whose slowness of growth will never be compensated by their number. The number of the other species is still so far below what I require for stock purposes that all the cuttings obtained during the next five months at least will be added to the number of cutting-yielding plants. The reports of the value of

*Cinchona Pahudiana* are so conflicting that it does not appear advisable to abandon entirely the cultivation of this species. Sir William Hooker, in a letter of the 8th January 1865, writes to me that some well known Chemists seem to think more favorably of it now, and that Professor Miquel has informed him that *Cinchona Pahudiana* and *Cinchona Carabayenes, Wedil*, are the same. This important identification was pointed out to me two years ago by Mr. Alan Black, the learned Curator of the Royal Herbarium at Kew, on my forwarding to Kew flowering and fruiting branches of *Cinchona Pahudiana* from Java. This identification adds nothing to the commercial value of *Cinchona Pahudiana*. The tables in this report shew the number and distribution of the plants of all species on the 1st February, and the growth during January of the measured plants. The short report by Mr. Mann on the condition of the plants is also given in full.

*NUMBER and Distribution of Cinchona Plants in the Government Plantation at Darjeeling on the 1st of February 1865.*

Name of Species of Cinchona.	Number in permanent Plantations.	Stock Plants for propa- gation	Number of Seedlings or rooted Cuttings in Nursery beds for permanent Plan- tations.	Number of rooted Cuttings in Cutting beds.	Number of Cuttings made during the month.	Total number of Plants, Cuttings, and Seedlings.
C. Succirubra ... ...	389	2,731	None.	None.	1,630	4,780
C. Calisaya ... ...	None.	23	.....	.....	None.	23
C. Micrantha * ... ...	15	569	.....	.....	360	944
C. Officinalis, including varieties ... }	50	11,479	.....	.....	7,800	19,329
C. Pahudiana ... ...	92	.....	5,000	.....	None.	5,092
<b>Total</b> ...	<b>546</b>	<b>14,802</b>	<b>5,000</b>	<b>None.</b>	<b>9,820</b>	<b>30,168</b>

*General Report on the condition of the Plants with reference to the headings of the Columns, and on the operations of the past month, by Mr. G. Mann, Assistant Conservator of Forests, British Sikhim.*

The number of plants planted out permanently in October 1864 has been increased by the planting out of 260 *C. Succirubra* at the lowest plantation.

The number of stock-plants has not been increased during the month, but remains the same as found by counting on the 1st December 1864, as growth has been very slow.

The seedlings of *C. Pahudiana* intended for permanent plantations remain still in the frames, and of the remaining species the plants in hand have not yet exceeded the number intended to be kept for stock-plants.

The number of cuttings made during the month amounts, as shewn above, to 9,820, which were made on warm beds got up out of leaves, &c., cut on the spot, and are doing remarkably well.

The condition of the plants is in the highest degree satisfactory considering the removal of almost all from Labong to Rungbee, a distance of about 20 miles.

The work chiefly done during the month consists of having made the abovementioned cuttings, planting in permanent plantation of 260 *C. Succirubra*, and preparing of beds for the stock-plants for propagation and planting out of 2,100 plants of *C. Officinalis* in addition to 6,659 which were planted out in November last.

New roads have been cut out at four different places and are partly open, and have given us access to different portions of the reserve lands intended for plantations as the plants increase.

Table showing the growth of Cinchona at the Ranghee Plantation near Darjeeling.—1st February 1865.

T. AXENSON, M. D.,  
Superintendent, Botanic Garden, and in charge  
of Cinchona Cultivation in Bengal.



## SUPPLEMENT TO The Calcutta Gazette.

WEDNESDAY, MARCH 1, 1865.

### OFFICIAL PAPERS.

*A SUPPLEMENT to the GAZETTE will henceforward be published, containing such Official Papers and Information as the Government of Bengal may deem to be of interest to the Public, and such as may usefully be made known.*

*Non-Subscribers to the GAZETTE may receive the SUPPLEMENT separately on a payment of six Rupees per annum if delivered in Calcutta, or twelve Rupees if sent by Post.*

*No Official Orders or Notifications, the publication of which in the GAZETTE is required by Law, or which it has been customary to publish in the GAZETTE, will be included in the SUPPLEMENT. For such Orders and Notifications the body of the GAZETTE must be looked to as heretofore.*

**Extracts from Correspondence relating to the Assam Trunk Road and to the Road to connect Assam from Gowhatta via the Hill Station of Shillong with the Plains in Sylhet and with Calcutta.**

To the Superintendent of Works, Assam.—(No. 5839, dated the 14th November 1862.)

The Lieutenant-Governor would wish to be informed of the course between Shillong and the Sylhet Valley along which a good Cart Road might be made at an expense of about 4,000 Rupees a mile.

2. The Lieutenant-Governor would like very much to have a definite and detailed Sketch of your scheme for opening out a Road between Sylhet and Gowhatta passing by Shillong, and His Honor would certainly desire to have this Road made, if it can be made, at a commensurate expense.

3. The first step would certainly be to make the Station of Shillong and the road a separate Division; but before moving in this matter, His Honor would wish to receive the fullest and most complete report which you may find yourself able to submit after the examinations which you have recently made of the country between the Sylhet and Assam Valleys.

From Major D. Birbeck, Superintendent of Works in Assam, to the Officiating Secretary to the Government of Bengal, in the Public Works Department.—(No. 506, dated the 9th December 1862.)

As directed in your letter No. 5839 of the 14th ultmo, I have the honor to submit, for the information of the Lieutenant-Governor of Bengal, a Trace Map shewing the course I propose for a good Cart Road between the Sylhet and Assam Valleys passing by Shillong.

2. As invited by His Honor, I proceed to give a definite and detailed a sketch of my scheme for this great work as can be done without actually having taken a section of the line. To have done

this thoroughly would have occupied more time than my other pressing duties in Assam would permit, and would have been unwise until His Honor's views on the subject were known.

3. A few words as to the Road that has hitherto existed between the Valleys will serve to show the impossibility of improving it so as to render it passable for carts, without which the value of a line of communication, as an outlet to the Province of Assam, and the link to connect the large European interests rapidly growing up in the two Valleys, would be nil. The present Road ascends abruptly upwards of 4,000 feet in the first ten miles, when it is precipitated down 1,500 feet in three miles to the Bogapanee River, thence to rise nearly 2,000 feet in two miles. After undulating steeply for twenty-seven miles it drops 2,300 feet in five miles to the lower plateau of the Coosyah Range, through which it passes till it meets the terre-plaine of the Valley of the Bernhampoor, twenty-five miles from Gowhatta. It is in all 115 miles in length. It answers the purpose of its maker, Colonel Lister, as an excellent and almost imperishable foot-path, and should never be suffered to fall into decay.

4. My reasons for adopting the particular course outlined on the accompanying Map are as follows:—

Commencing with the southern extremity on the River Soormah, I would have preferred making the Town of Sylhet the starting point had there not been two good reasons against it; first, Sylhet is only approachable by steamers for six months out of the twelve; and second, any line from it towards Shillong must have crossed several rivers of great size and a country under water from June to November. The highest point on the Soormah to which steamers have at all seasons access is Chattuck, the great Lime Port; and from Chattuck to the foot of the Hills at Teriah Ghât a favorable line exists, certainly under water during the rains, as indeed the whole Sylhet Valley is more or less; but as it occupies the ground between two parallel streams, a

moderate height of embankment with frequent culverts will suffice. The distance is twelve miles and no river occurs.

5. At Teriah Ghbst the line enters the Cossyah Hills by the basin of the Dobilee River, up the Valley of which it steadily rises 5,000 feet to the plateau of Lilankhote, a distance of twenty-three miles, never exceeding in its gradient more than one foot in twenty-five. This will be the most difficult and the steepest part of the line. In first entering the Dobilee Valley it will hold close by the river's edge under beetling precipices of limestone, of which the railway will be built, to ten feet above highest flood mark. This occurs for less than a mile. It afterwards crosses the west Tributary of the Dobilee by a moderately sized bridge and proceeds onwards along a steep hill side till within three miles of Lilankhote, when the sandstone plateau being reached the line runs through easy soil.

6. I must here stop to consider how this Section (the only difficult one in the whole line) is to be constructed. There will be a great deal of hard work and some blasting. It lies in close proximity to some of the troublesome Jynteah Villages, to overawe which the presence of a Military Force will be for some time necessary. It will require a good deal of skilled labor which the Cossyals cannot supply. Lime, iron, coal, are abundant, but labor is scanty and dear. To smooth all these difficulties I would ask for the assistance of a Regiment of Muzbee Sikhs. Their presence would have as good a political effect as that of any other Regiment the place of which it would supply. Their labor would be worth to me more than half their cost, therefore one-half the cost of the Regiment might be debited to my works and the other half to the Military Department. A certain number of men would always be under arms, the remainder would be on the works, receiving "working pay." A young Officer (passed man at Roorkee) to every two hundred men would ensure their labor being properly applied. They would be assisted with all the local labor available.

7. From the Lilankhote plateau the line gently descends four miles to the Bogapance River, over which a bridge is now under construction. It then ascends at a gradient of one in fifty by the iron producing villages of Moleem and Nonkrem to the eastern shoulder of the Shillong Hill, from which it as easily descends to the plateau of Yeodo, selected for the Head-Quarters of the Military Force in the Cossyah Hills and a Sanitarium for Convalescents. The whole of the last ten miles are through easy ground and cross no large streams except the Bogapance already provided for.

8. From Yeodo the line descends 1,800 feet to the Oomeean River through stiff clay and shale. I have not yet determined the exact spot at which this torrent should be crossed, but it will not be a matter involving any great engineering difficulty or expense. Neither have I determined the exact course of the line from the Oomeean to Gowhatta, although I have so far fixed it that it need not cross the broad stream of the Dibroo, as does the line proposed by Colonel Reid, nor make the long detour to the eastward sanctioned by him. It will generally run over stiff undulating soil at a general elevation of 2,500 feet above the sea level, until it gradually sinks within a short distance of Gowhatta into the Berhampooter

Valley. I expect to have all this part of the line closely surveyed and laid out within the present working season.

9. The entire distance by the route I have now sketched from the Berhampooter at Gowhatta to the Soormah at Chattuck is about 104 miles. Both these rivers are navigated by Steamers direct from Calcutta, having access to both ports all the year round. These are also ports of call to the residents of Upper Assam and Cachar.

The line of road under report would bring either of these ports, Gowhatta and Chattuck, within fifty-five miles of Shillong, Yeodo, destined probably to be the most favorite Sanitarium in India. It would form the easy ascent from the fever-stricken Valley of the Berhampooter to the pure atmosphere of 6,000 feet of elevation. It would prove the only certain sanitary measure for the residents of Gowhatta, laboring, as they periodically do, under a pestilence unknown except in the swamps of New Orleans. It would offer to the large European Communities now spreading over Assam and Cachar the means of reaching a climate where their children may be brought up as vigorous as in the land of their fathers, and the ease with which the journey might be performed would offer even to the health-seeking resident of Calcutta facilities which no other Sanitarium can shew. Chattuck can be brought within six days of Calcutta, and Shillong within one day of Chattuck.

10. I have appended a rough Estimate of the probable cost of constructing a good Cart Road twenty-four feet wide, bridged throughout (with the exception of the Oomeean River) and metalled over thirty miles which lie through low grounds. I have also added ten Staging Bungalows. The probable average cost thus amounts to Rupees 4,452 per mile.

#### *Rough Estimate for the Great Shillong Hill Road, twenty-four feet wide.*

Number of Sections Locality.	Distance in miles.	Description of Work.	per sq. ft. rate.		Rate per mile.	TOTAL.
			Amount	Rate		
Chattuck to Teriah	18	Earthwork Bridges ..	2,000 1,000	3,000	3,000	26,000
Teriah to Lilankhote	23	Earthwork Bridges ..	5,000 1,000	6,000	6,000	1,38,000
Lilankhote to Yeodo, Shillong	10	Earthwork Bridges ..	3,000 1,500	2,500	2,500	25,000
Yeodo' to the Oomeean	10	Earthwork Bridges ..	3,000 1,000	4,000	4,000	40,000
Oomeean to Gow- hatta	46	Earthwork Bridges ..	2,000 1,000	3,000	3,000	1,44,000
Staging Bungalows	...	...	2,000	...	2,000	20,000
Mettalling	30	...	...	2,000	2,000	60,000
Distance	104	...	...	...	...	1,50,000

Or Rupees 4,452 per mile.

Note. — Bridges over the Oomeean River not included.

From MAJOR J. C. HAWTHORN, Officiating Commissioner of Assam and Governor General's Agent, North-Eastern Frontier, on Special Duty, to the Secretary to the Government of Bengal,—(No. 70, dated the 26th January 1863.)

THE Superintendent of Works, Assam Circle, has forwarded, for my information, copy of his letter No. 806 of 9th December 1862, which, although it has reached me so long after date, I think it as well to notice, although I have not been called upon to do so.

2. I agree generally with the Superintendent that the present road cannot be converted into a good Cart Road, and I trust if a road is constructed the day may not be distant at which carts will ply between the plains of Sylhet and Assam, but it must be borne in mind that as yet carts are not used either in Assam or Sylhet.

3. I also agree that Chittuck is preferable to Sylhet as a terminus to the proposed Road. I believe that water communication is open between the two places all the year round.

4. What I presume to be a portion of the intended Road has already been constructed this season by an assignment from the Local Funds. It is that in immediate connection with the proposed bridge over the Bogapanee. The gradient of that portion visited by you was admirably easy and fully answers Major Briggs' description, but the danger of the work had been entirely overlooked: this has been pointed out to Major Briggs and the Executive Engineer.

5. With regard to the proposition contained in the 6th paragraph of the letter under notice, I beg to observe that if I rightly understand the direction in which it is proposed to carry the Road, it will not, even should the people of Jynteah continue in rebellion, be necessary to maintain a Guard upon it. The Paunch Poonjee, the nearest village of Jynteah to the line, have submitted to the orders of Government. Were a Muzbee Sikh Regiment upon the spot no doubt they might be employed with advantage while detained here, but I do not think it would be desirable either to raise one or to call one from the North-West for the purpose. It is to be borne in mind that their chief article of food, and indeed, I may say, the whole of their food, would require to be imported from the plains. The labor of the country is dear compared with that of the plains, but would, I think, prove cent per cent cheaper than that of a Corps of Sikhs. The Overseer on the Road above referred to informed me that he had 300 men at work whom he paid at the rate of 8 Rupees per month. This, too, in a time of rebellion, while we are employing daily, probably, not fewer than 1,000 laborers in the service of the Troops. If the persons employed to supervise the work are good tempered and careful to pay their laborers regularly, I do not think labor will be wanting.

6. Without survey or plan of the intended road it would be premature on my part to offer further remark upon it.

From COLONEL E. L. OMMANNEY, R. E., Officiating Secretary to the Government of Bengal, in the Public Works Department, to the Officiating Secretary to the Government of India, in the Public Works Department,—(No. 2413, dated the 10th June 1863.)

I am directed by the Lieutenant-Governor to

\* No. 2413, dated the 10th December last, 1 Map. submit, for the consideration of the Government of India, a report\* from the

Superintendent of Works in Assam regarding the

† No. 70, dated the 26th January 1863. proposed line of Road connecting the Assam Valley with the plains of Sylhet via Shillong: copy of a letter from the Officiating Commissioner of Assam, containing the remarks and opinion of that Officer respecting the project also accompanies.

2. There is already a mountain road from the foot of the Chayah Hills on the Sylhet side to Cherra Poonjee and Nangklow in the Hills and from thence to Gowhatta on the Berhampooter; but if it is not susceptible of being improved so as to admit of the passage of carts, the importance, however, of opening up a thoroughly good road between the two places practicable for wheeled traffic is great, and the line proposed, which has been selected by Major Briggs after personal examination of the route, will provide for this, while at the same time it will place the newly selected Station and Sanitarium of Shillong in communication with both Assam and Sylhet.

3. The termini of the road are to be at Gowhatta in Assam, and at Chittuck on the River Soormah, a distance of 104 miles. The proposed width of the Road is twenty-four feet, and the cost of construction is estimated by Major Briggs at Rupees 4,63,000: considering the commercial and political advantages which will be gained by such a Road, and the control that the Government will be enabled to exercise by it over the Cossyahs, Jynteahs, and other frontier tribes, the Lieutenant-Governor is of opinion that the Road will be well worth this sum, or even Rupees 6,000 or 7,000 per mile, to which, it is not improbable, the actual expenditure may amount.

4. The country traversed by the Road is of such a nature that a detailed Estimate of any value cannot be at once obtained; but the Lieutenant-Governor would solicit the Government of India to accord general sanction to the construction of the Road, and to an outlay of Rupees one thousand per mile for opening out a serviceable track in the first instance, on the understanding that this amount is not to be exceeded until a detailed Estimate for the Cart Road is submitted, the amount of which will not exceed 7 lakhs of Rupees.

5. Should the above proposal be approved, the Lieutenant-Governor will, in submitting the revised Budget, make provision for the expenditure required to commence the opening out of the Road during the next working season.

Extract from a letter from MAJOR D. BAROOGA, Superintendent of Works in Assam, to COLONEL E. L. OMMANNEY, R. E., Officiating Chief Engineer, Bengal,—(No. 762, dated the 21st September 1863.)

PARA. 6. I am desired to state what I expect to be able to complete this year with the sum of Rupees 40,000 available for the Gowhatta and Sylhet Road. My reply is as follows:—

7. I expect to be able to complete a good Road ten feet wide, with a maximum gradient of one in twenty-five from Gowhatta as far as Shillong about seventy miles.

I expect to have this bridged temporarily with good strong timber platforms, and to clear the jungle for a distance of fifty feet on either side of the roadway.

I further expect to have a bridle path opened from Shillong to the foot of the Cossyah Hills in the Sylhet plains.

For this last portion I hope to have the services of another Assistant Engineer.

From LIEUTENANT-COLONEL W. MAXWELL, R. A., Officiating Secretary to the Government of Bengal, in the Public Works Department, to the Superintendent of Works in Assam.—(No. 4891, dated the 9th October 1863.)

Your letter No. 762, dated the 21st ultimo, to the address of the Chief Engineer, Bengal, regarding the projected line of communication for connecting the Valley of Assam with the plains of Sylhet and Shillong having been laid before the Honble the Lieutenant-Governor of Bengal for his consideration and orders, I am directed to convey to you the following instructions:

2. In anticipation of the orders of the Government of India, in the Public Works Department, on the reference made in June last on the subject of the proposed line of Road, the Lieutenant-Governor has been pleased, with advertence to the importance of this Road, as well as to the necessity of taking full advantage of the short working season now fast approaching, to authorize the commencement of the work on that portion of the Road between the Gowhatta and Shillong on the representation now made by you, from which it appears that a good Road of ten feet width, with a gradient not exceeding one in twenty-five, with jungle cleared for fifty feet on either side, and provided with strong timber bridges, can be opened out at a cost of about Rupees 500 per mile, or for the 70 miles a sum of Rupees 35,000.

3. The Lieutenant-Governor is also pleased to sanction the opening out of a bridle path from Shillong to the Sylhet plains at a cost not exceeding Rupees 5,000, making for the two works the total sum of Rupees 40,000 mentioned in your letter under reply.

4. In recording sanction to these two works which will be complete in themselves, I am to state that they should be so carried out as to be capable of improvement hereafter if the measure should be sanctioned by the Government of India, but the work for this season should be confined to completing the work now sanctioned, and to the preparation of such data as will admit of the submission of a detailed Estimate with Sections for a completely bridged Road twenty-four feet wide.

5. With reference to your request to be allowed the services of another Assistant Engineer, I am to inform you that endeavors will be made to send up an efficient Assistant.

No. 5492.

Copy forwarded for the information of the Government of India, in the Public Works Department.

From MAJOR D. BAROON, Superintendent of Works in Assam, to COLONEL E. L. OMMAHNEY, R. E., Officiating Secretary to the Government of Bengal, in the Public Works Department.—(No. 43, dated the 8th May 1863.)

I HAVE the honor to submit, for the consideration of the Lieutenant-Governor of Bengal, my report on the Assam Trunk Road, on the examination of which I have been engaged for the past four months.

2. Annexed to the report is a letter from the Officiating Commissioner of Assam conveying his remarks upon my project, and regarding it from a political and fiscal point of view.

3. Attached to the report is an abstract of the quantity of work required in the construction of the Road and an abstract of the probable cost.

4. As instructed, I place the terminus of the Trunk Road opposite to Doobree on the Berham-pooter, but am no way responsible for the adoption of the line from Doobree to Rungpore as the connecting link between the Assam Trunk Road and Bengal.

5. But whether the Doobree and Rungpore line or the Kurribaree line be eventually adopted is of little moment to the subject of my report, as the Trunk Road must, under any circumstances, run within a few miles of Doobree.

#### *Report on the Assam Trunk Road.*

The fair and fertile Province of Assam has been endowed by nature with all

Preliminary. the elements of a favored land, but these manifold advantages have been well nigh nullified by the absence of that union throughout its parts without which the very current of its life, so to speak, is unable to circulate freely. That its Sub-Divisions taken separately are thriving is undoubtedly satisfactory; but as long as there exists between them no connecting link there can be no mutual benefits reaped, and the advancement of the Province as a great whole must needs be fatally retarded.

Some of the Stations in Assam are unapproachable during the dry season, except by long travel through dense jungle. A steamer once in six weeks forms the sole means of intercommunication, the benefit of which, moreover, is only fully felt by the River Stations. It takes longer to correspond between Goalpara and Dibroogur than it does between Calcutta and Borobay. Dibroogur or Luckimpore with its hundreds of Tea Planters is, to all practical purposes, farther from the Presidency than any Civil or Military Station in Hindostan.

An erroneous impression prevails that as nature seems to have intended the Berham-pooter as the great thoroughfare of Assam, therefore land communication is, if not unnecessary, at least of very secondary importance. Such is, however, a great mistake which cannot long be entertained in the immediate presence of this mighty but unmanageable river. In fact, so far from the country making the river subservient to its requirements, it is the river, as shewn hereafter, which dominates the country.

That which is wanted to waken the Province into life and inspire solid strength is a Bond running through the entire length of the Valley thoroughly open and passable throughout the whole year.

And surely the interests of the Province deserve it when every available acre of land is becoming the home of some enterprising Englishman, when it bids fair to rival the best Tea-producing Province of China, and when the Deputy Commissioner of Luckimpore can report an increase to the revenue of three lakhs within the last four years.

Assam has been the Cinderella of the State ever since it has owned British dominion. No Province of British India but can shew some public work to mark our rule; yet were Assam abandoned to-morrow there would remain the traces of her old Rajahs in days of warfare and oppression, but not a single monument to the memory of England's more distinguished servants.

Savages though they were, these ancient Rulers of Assam fully appreciated the incalculable advantages to the country of intercommunication by land, and of restraint upon the incursions of the water. All their roads, alleys as they called them, were constructed with this double object, as highways above the line of flood, and as bunds to control the inundations of their rivers. From above the spot where the Dihong and Dibong join the Berhampooter down to the farthest confines of the Kamroop District relics of their efforts remain, which, for bold engineering skill and a wonderful contempt of difficulties, deserve to rank with the works of the old Romans. Their lines of road were generally so well chosen as to direction that if we can only afford to make the roadway as massive as their bold projects require, many portions of their works may be adopted. To unite their efforts with ours though years roll between us, and to complete, repair, and bring into use what internecine wars and foreign invasions prevented them from doing, has throughout this long and arduous survey been my constant endeavor.

In proceeding to report in detail on the line for the Assam Trunk Road, it will be well to look at the physical features of the country through which it has to pass.

The great feature of Assam is the Berhampooter. The cold-weather Physical features. discharge immediately below its junction with its two Tributaries, the Dihong and Dibong, was found by Lieutenant Wilcox to be 120,176 cubic feet per second, of which the Dihong owned two-thirds. And at Gowhatta 300 miles further down it has since been found to discharge in flood 894,700 cubic feet per second, and in dry weather 318,200. At the same place the mean velocity was found to be 5·6 feet per second in flood, and 3·67 in dry weather. This mighty and impetuous river has at times swept over the greater part of the valley, laden with the wreck of mountains accumulated during the long course of itself and tributaries larger than itself, through the Himalayahs it rushes out of its rocky gorges upon the more level Valley of Assam, where its diminished current permits the deposit of the vast amount of silt brought down with it. This deposit, settling in greater proportion along the banks where the current is slack, raises them above the level of the country, and with them, in due proportion, the whole bed of the river.

The effect of this upon the Tributaries which descend from the Hills confining the Valley of Assam, is to prevent their free discharge and to cause them to overflow the levels between the hills and the river. This is the case when the Great River and its affluents are equally in flood. But when, as usually happens, the floods of the Berhampooter exceed in height those of the lesser streams, the currents of the latter are turned back, and the monotonous river rushes through the open channels and spreads over the level country, which, in many instances, is 10 and 12 feet below the highest flood line. This may go on for ten or fifteen days, by which time the inundation is complete and a great part of the Valley has become an island sea.

As the river subsides so the inundations commence to clear off the surface of the country, discharging through the channels by which they entered. But it is which renders Assam so peculiarly dangerous months after the subsidence

of the periodical rains. The country has lain under water for weeks, the waters subside, leaving a rank vegetation covered with slime and mud to the action of a powerful sun.

Successive years of inundation through the same channels gradually widens them and prepares a fresh bed for the river, which, upon the occurrence of a sand bank in its old bed, it is not slow to take advantage of. Thus fresh channels of the Berhampooter are formed, and no two years find its course the same. Tradition gives at places a width of ten or twelve miles throughout which it has shifted its uneasy bed.

Besides the main channel of the Berhampooter there are other systems of drainage parallel to it, but in some cases removed from it by a distance of thirty or forty miles. These are always connected with the river at both ends, and are in fact inland channels. They are most valuable as lines of navigation for native boats during the heavy floods, because they present a more moderate current than the main river; such are the Kullung, the Golabheel, the Catre-Diphlo, and the Koolsee.

These, like the Berhampooter, and from the same causes, are lined with natural embankments considerably above the level of the surrounding country, and as their streams are moderate, these embankments are seldom breached or inundated. In the case of the Kullung, which runs for nearly a hundred miles through Central Assam, this natural glaeis is so massive and high that the drainage of the country is by it forced back towards the foot of the hills, and not until it has accumulated so as to form a powerful river is it able to force its way into the Kullung. For fifty miles along the south or left bank, only three streams succeed in uniting with the Kullung. These broad embankments attract the populations of the country, and the banks of the Kullung form one vast belt of villages.

It requires no further argument to shew that the banks of these interior channels of the Berhampooter must afford favorable lines for roads. These channels are also capable, at no very great expense, of being united and formed into a river canal, which might, with a few breaks, extend from the Dikoo River, in the Sebaugor District, to Goalparah.

The chains of hills which confine the Assam Valley are prolongations of the Himalayahs. That on the north is the most eastern spur of the outer Himalayahs, which extend from the Indus to the Berhampooter, and it is occupied by the Bootan and other Hill Tribes. That on the south is a spur of the Alpine Range which separates the Valley of the Berhampooter from what Wilcox supposed to be the Irrawaddy. It is occupied by the Singhphos, Nagas, Cossayahs, and Garrows, besides other Hill Tribes.

From the lofty northern or Bootan chain descend many rivers of great size. From the southern or Cossayah Range, which does not exceed 8,500 feet of elevation, the rivers, with three exceptions, are short.

This points to the southern or left bank of the river as being more favorable for a line of road than the northern.

It is therefore with the left bank of the river, upon which also the chief towns exist, that we have to do.

The geological formation of the chain which borders Assam on the south is generally of granite

of a coarse and refractory nature. Occasionally sandstone occurs, and also some of the stratified rocks fit for building purposes.

In a few of the rivers of Upper Assam, and in

\*Fragments of limestone rock rounded by the action of water.

some of those which issue from the Bootan Hills, limestone pebbles\* are found but generally scarce, while near the Namba Falls in the Meekir Hills crystalline limestone occurs; but the largest supply is obtained from the Digarro River, thirty miles above Sudyah on the Eastern Frontier, where the bed of the river is a mass of fine limestone nodules and boulders brought down by the water. Coal of good quality is found all along part of the southern range of hills in Upper Assam, and is brought down for the use of the steamers at something like eight annas per mound.

The soil of the lower spurs and off-shoots of this chain of hills varies from red granular clay to that of a lighter and less retentive nature. As a rule, it produces the most luxuriant tree vegetation, including useful timber trees. At intervals considerable sal forests occur. But the humid climate of Assam forbids the use of timber to the Road Engineer.

On these spurs, or the plateau projecting from them, many of the most productive tea plantations of Assam have been formed, and cotton, as the main staple of cultivation, is produced by the hill people far up their flanks.

Sufficient has been already stated to shew that

Selection of the line. in selecting the line for a road through the Valley of Assam a wide berth must be given to the Berhampooter where its banks are not sufficiently stiff to resist the action of the stream. At the same time, in many of the great plains at present subject to partial inundation, the road embankment might be made capable to control the inundations of the Berhampooter and so serve the double purpose of roadway and bund. This was successfully done by the old Rajahs of Assam.

When Rajah Ropdroo Singh, upwards of a hundred years ago, commenced the present "Bor Allee" (Great Road), also at places called the "Dhodar Allee" (Complete Road), he designed it to oppose an impenetrable barrier to the floods of the Great River, as well as to afford the most direct line of communication between the important points of the country. It was never completed, but the portion between Jaipors and Janknauj near Jorehath, about seventy miles, remains to shew the stupendous nature of the work. From the height of the embankment it is visible two miles off. The width at top is from 35 to 40 feet. Its course is generally perfectly straight, and where there is a bend the curve is formed with mathematical precision. The trenches are dug with equal regularity, and never approach nearer than 100 feet from road centre. So thoroughly has it reformed the water system of the country that in one place the whole drainage of thirty miles passes through four openings of about 100 feet each, and the sides of these openings have not been eroded by the passage of the waters for more than a century. The estimated area of waterway on a line parallel to this part and further inland was 718 feet as per a former survey made; only one of these openings was bridged, as according to present tradition that Rongaljee Architect succeeded too well in pleasing the Rajah, who, fearful of so

accomplished a person returning to Bengal, and affording aid to the British Government, caused him to be strangled.

The Jorehath people were most solicitous that the line of the Bor Allee should be adopted for the Trunk Road, and predicted the greatest benefit to the country. They thought the adoption of any other line unworthy of so great a Government when their own Rajahs had successfully constructed a portion of the "Great Road." I directed the Executive Engineer, Upper Assam Division, to make a thorough survey of it from Rungpore (Seesaugor) westwards to the Dhunseri River, but after three months have elapsed he has not yet supplied it, and this Report, as far as it is concerned, must be based on what I observed, and not upon actual measurement. I shall be able to adopt about fifteen miles of the existing Bor Allee, and propose extending it to Nigring, where the Great Jorehath Plain ceases. This will present a barrier to the inundations from Seesaugor to a point thirty miles west of it. At various other places, as along the banks of the Kullung, in the Nowgong District, and also westward of Gowbatty, I have selected the line of road with reference to the control of the inundations where such selection does not interfere with the safety or utility of the road. Of course ample waterway has been provided for the passage of the waters of the interior. It is only sought to prevent the ingress of the Great River. I had in view at one time the fixing of regulating gates on such bridges through which the river floods pass; but, considering the Establishment which would be required to attend to them, am now inclined to think that, with the exception of three places, it would be premature. They are not, moreover, easily fixed on the wrought iron girder bridges, which, as shewn hereafter, are, I am clearly of opinion, most applicable to Assam rivers.

For other principles which have either guided or controlled me in the selection of the line, it will be best to refer to the Maps accompanying this Report, and to the detailed description of the line mile by mile. Suffice it here to say that the total length of the road from Dibroogur to Dobreo will be about 354½ miles.

The roadway is to be every where not less than two feet above highest flood line. It is to be twenty-four feet wide, with slopes of two to one. A berm 10 feet wide is to be left between the foot of the slopes and the trenches, where, subject to inundation, the slopes will be turfed.

That the roadway may be available, if hereafter required, for a "Light Railway" no curve of less radius than 1,000 feet, and no gradient more than 100 feet in a mile, will be permitted.

I have made no provision for metalling the roadway, as I think the great object at present is to get the earthwork and bridges finished.

In the Estimate provision has been made for bridging all but two streams, the Diheen and Dhunseri, the first 500 feet, the second 500. The largest river I propose to bridge is 820 feet broad. Without bridges a road in Assam is useless. It would be better to bridge the rivers and leave the formation of the roadway for a future time than to form the roadway and neglect the bridges.

The sub-soil of Assam is generally favorable for the construction of foundations, and, except in a few instances in Upper Assam,

occur, we find stiff and impermeable clay a few feet below the surface. It being the middle level of the country through which runs the line selected, we approach the streams where they are neither shallow sprawling torrents as when they first issue from the hills, nor broad shifting channels as when they enter the Berhampooter. We have generally been able to take them where they have deep beds, well defined banks, and a steady regimen of their own.

From the adoption of this middle level for the line of road, we greatly reduce the number of bridges which would be required if the road ran immediately under the hills, as there the numerous streams have not yet formed rivers; and we have also to deal with water in a much less formidable state of motion, for the great swamps which lie under the hills receive these streams, spread them over a great extent of country, where evaporation and absorption diminish their discharge and prepare them to drain off quietly through the middle level into the Berhampooter. I found that in the examination of two lines between Gowhatti and Goalpara one-third less of running foot of waterway was requisite on the middle line than would have been required on a line close under the hills. I do not say that less area of waterway was required, for in the one case the bridges would be sufficient to afford passage for a great depth of water moving at a steady pace, whereas in the other the bridges would require to be of a class suited to pass shallow but impetuous torrent flooded to excess during the rains, and nearly dry the remainder of the year.

The scarcity of skilled and even ordinary labor in Assam renders imperative that all means be used to economise it. I propose with this view to use wrought iron girders and light abutments in all cases where the span is greater than 15 feet. In every way the iron girder bridge is the most suitable for Assam, as it affords the largest amount of waterway when the country is under inundation, and a free passage for boats—a necessary condition where all streams are used for navigation as long as water remains in them.

Culverts up to 15 feet span will be built of stone or brick masonry on the Standard Plan, provision being made for the greater height of abutments required in the deeper nullahs, and for a width of 24 feet between the parapets.

The wrought iron girders and screw piles should be made up in Calcutta, and there is water carriage from thence to the site of every considerable bridge on the line; they might be placed on board lighters fitted with derricks and appliances, and so put up without the expense of establishing work-shops at the site of each bridge.

I strongly advocate all these arrangements being made in Calcutta, either by contract or otherwise, as it would save the necessity of getting up expensive iron work establishments here.

Messrs. Knight and Co. have sent me a Schedule of the cost at which they would put up all bridges above forty feet in span on the wrought iron lattice-girder principle, with masonry abutments, and intermediate piers of cast iron screw piles.

I calculate their rates to twenty-five per cent higher than what the work might be done for by the Department; but my calculation is based on the supposition that the whole of the iron work is required at 420 per ton, and that all parts of the work will be fixed in the Government

Establishment in Calcutta, freight being charged at Rupees 25 per ton to site of bridge.

There is no doubt Messrs. Knight and Co. would do the work more expeditiously than if left to us, as the formation of the roadway and the culverts will engage all the labor I can possibly obtain for at least three years.

I do not recommend the use of timber for bridges, except as a temporary expedient. This climate will cause the decay of the best sal timber within four years.

At every twelve miles it is proposed to build a Shelter. Bungalow to afford shelter to the Overseers of the Section whilst the road is under construction, and to Travellers when the road is completed. A good waterproof roof with flooring raised on posts and mat walls will be quite sufficient.

As the line runs through dense jungle for nearly one-third of its length, the cost of clearing it will be considerable.

It might be possible to provide for the thorough clearing of the ground on either side of the road by giving it for a breadth of 100 yards to settlers free of cost or rent on condition that they keep it cleared. This can only be arranged through the Civil Authorities.

I have supposed the road to be divided into twelve Sections of about thirty miles each.

I think it will be necessary to appoint a Sub-Engineer to every two Sections, and two Overseers or Assistant Overseers to every Section. Thus six Sub-Engineers and twenty-four Overseers would be required to push on the works with vigor, and, in advocating such vigorous progress, I would beg that it may be borne in mind that the working season in Assam is only six months in duration, when, if great progress be not insisted on, such a work as the Trunk Road may drag along for years.

I have in a former letter shewn the necessity of having a Central Assam Division with Head-Quarters at Nowgong, in order to relieve the Executive Engineers of the Upper and Lower Assam Divisions. I shall not therefore include the expense of that Office in this enquiry which has reference solely to the Assam Trunk Road.

The experience of the past year forbids me estimating the cost earth-Rates and Contracts. work at less than Rupees 3 per 1,000 cubic feet, and masonry at from Rupees 15 to Rupees 18 per 100.

Iron work is taken at the prices named by the Chief-Engineer in his Memorandum No. 1602 of the 2nd February last, with carriage from Calcutta added at 25 per ton and erection at 20 per cent upon cost.

I strongly advocate every means being tried in Calcutta to effect the greater portion of the work by contract; and I think some 800 millions of cubic feet of earthwork should attract some of the Railway Contractors now out of employ.

But to effect arrangements with them the appropriation of at least four lakhs of Rupees per annum for the work is an absolute necessity. With such a sum operations could be commenced opposite Doobree, in the vicinity of the Rungpore District, where almost any amount of labor can be obtained and advanced on a scale commensurate with the magnitude of the undertaking.

The Estimates which I submit are the result of <sup>The Estimates.</sup> a personal examination of every yard of the line, with the exception of ten miles of the western extremity between Luckipore and the Berhampooter opposite Doobree, where I was struck down in the end of March by jungle fever, and have since been unable to recover strength sufficient to return to the spot. I have, however, had it surveyed, and, as the nature of the country is well known to me, I am confident in the approximate estimate I have made of it.

At all inundated or doubtful places cross sections have been taken with the Spirit level, and I believe the Estimate is a "close approximation to what the cost will be." However, when I state that since December I have examined upwards of 600 miles of country in the selection of the line, this greater part of it through dense jungle and swamps, it cannot be expected that the Estimates are more than what I intended them to be, viz. a guide to Government in considering the whole project, and a satisfaction to myself in affording me data to check the more exact Estimates which I have called for, but which, from the want of Establishment, will not be completed till next season.

The Estimates for the entire road with bridges over every stream, with the exception of the Rivers Diheen and Dhuenseree, amount to Rupees 21,29,553.

I will now proceed to give in detail a description of the line which will serve as a guide to the examination of the Estimates.

The present existing road between Dibrooghur and Seesangor is one of the proposed line of Road.

**Secton I.**  
Dibrooghur to Seesangor, 4 M., 2 F., 200 Yds.  
very straight but raised generally above the flood line. Its adoption for the Trunk Road is a matter of course. It will be only necessary to round off the turns to widen it, and to complete the section of the road to a uniform height of two feet above possible inundation.

For many miles the road is at present impervious to the sun-light from the dense mass of surrounding forest, and it is consequently damp and unfavorable to traffic. All but an occasional fine tree will be removed to the distance of 100 feet on either side of the roadway.

Between Dibrooghur and Seesangor all culverts have been already provided for (Estimate No. of ) and about twenty are either completed or well advanced.

At the 15th mile from Dibrooghur occurs the Seesah River, with a Section of 100' x 20', having stiff clay banks well defined and hard sandy bottom. A wrought iron lattice bridge of two openings of 60 feet each and light abutments is provided for in this Estimate.

At the 28th mile the road strikes the Diheen River immediately below where the Diheen-Sutes enters the Burra-Diheen. It is from 560 to 600 feet wide, with light loamy bed, and banks covered with grass and forst. The depth of water during the cold season is not less than four feet, and it is consequently navigable for boats all the year. Rising in the distant country of the Singphos it is a great river during the rainy season, in fact, the largest on the left bank of the Berhampooter. The only means I suppose for facilitating the crossing of this river is by good ferry boats and reducing the ghatas to an easy slope.

This river, with others in Assam, overflows its banks at places, and to prevent this the Assamese Government seem to have given much attention. Bunds exist, but their dilapidated condition renders them of but partial effect. It would be of great benefit to the country to have the whole system of bunds examined in connection with the District Roads (for the two are intimately connected) and put into thorough order and kept so.

Nine miles further on is the Demoo River, 110 feet wide, with sandy bed and stiff clay banks, well defined and not subject to inundation. For this a bridge similar to the Sessah has been provided in the Estimates.

At six miles from Seesangor is the Disang River with an area of 800' x 25'. Its beds and banks of a loamy sand. It has four to five feet of water in it in the dry weather, and is a very difficult river to cross after rain. I have provided a wrought iron lattice bridge of five spans of 60 feet each.

Seesangor is remarkable for the extraordinary artificial lake round which <sup>Seesangor to near Jore.</sup> it is built! This lake is two bath, 35 M., 0 F., 150 Yds. and a half miles, in circumference, being—long and—broad; and the surface of its waters in January measured 28·26 higher than the surface of the waters of the Dureeka Nullah close by, that is about 21.11 above the level of the surrounding country. The lake is connected with no ground of superior elevation, and has therefore no supply channel. I could learn of no known springs, so that its waters must be the accumulation of rain only. Close by to the westward flows the Dikoo River, 360 feet wide, for which a bridge is estimated to be built under the town; and beyond is the famous Bor Allee or Great Road of the Assam Rajahs, which extends, with occasional breaks, from Jaipore to Jankhanah, where it ceases incomplete. It is from 35 to 40 feet wide at top, and 20 feet above the level of the country. It has few openings, for its design has been to throw all the minor streams together and afford them passage in one volume in intervals of four, five, and eight miles. This is easy on account of the dead level of the country. In places it has been considerably worn by the constant passage of large herds of cattle which, during the floods, have made it their abiding place for a century. I received many petitions from the Mouzadars of the District praying for the adoption of the Bor Allee as the Trunk Road, because that would ensure its completion and its future repair. Their interest in the Bor Allee is as a bulwark to the inundations of the Berhampooter. If completed it would rescue tens-of-thousands of acres for cultivation and greatly improve the revenues of the District. I am myself much in favor of its adoption as a noble work, which it is worthy of the Government to complete, especially as it offers a considerable saving in distance and no great increase in expense. Four bridges of two openings of 60 feet each, and two of 80 feet, will be necessary to cross the river channels which intersect it up to the high land at Daengong.

The road at present used between Seesangor and Daengong on which some drain bridges are built and others are building under Budget No. 71 of the 1868-69 traverses higher ground than the Bor Allee, but is only 12 feet wide, and very little raised, so that to complete it to the fall Section nearly as much earthwork would be required as is contemplated for the Bor Allee.

Besides drains eleven bridges varying from 60 to 130 feet span, would be requisite, costing a great deal more than the six bridges I require for the Bor Allee. On these grounds, therefore, the adoption of the Bor Allee is preferable. The other road is necessary as a branch road to Jorehath and Golah Ghât.

Under the head of the last Section I have brought the description of  
Section III.  
Near Jorehath to Dham-  
serree River, 28M., 2F., over twelve miles of this  
Section.

At Deargong the line of the Trunk Road meets the Gohur Allee (or War-path of the Assamese) said to have been constructed in a single night during the Muttack invasion.

It extends from Jorehath to the Dhunserree and has a general width of 12 feet and a height of from two to four above level of country, which is sufficiently high to be removed from all chance of inundation, with exception of half a mile near Rangamuttee, where the embankment must be 10 feet high to keep out the back waters of the Berhampooter. Seven bridges from 20 to 60 feet span and fifteen culverts are required over this portion of the road.

Close to the Dhunserree a branch road runs off to Golah Ghât, distant about seventeen miles, a good fair-weather road made by the Assam Rajahs. I found the remains of another road running down to Dhunserree Mukh (a Steamer Station) and, as it is of importance to the Golah Ghât residents, I ordered the Executive Engineer to have it examined and an Estimate prepared for its repair, but have not yet received his report. At the 29th mile from Jorehath is the Dhunserree River, 500 feet wide, with very steep sandy banks and a strong current, with about five feet of water during the cold weather. It is a very large and powerful river during the rains. We can do nothing for it at present but establish a good ferry and slope the banks to afford an easy approach.

We have now entered on the plateau which lies between the Meekir Hills and the swamps of the Churnoo River to Baguree, Berhampooter, and the general elevations of which varies from 20 to 40 feet. It is thickly intersected with hill streams, the deep gullies of which are in many places subject to inundation from the Berhampooter for some distance up their courses. Along this plateau the Dhodur Allee holds its course. It is very straight with a general Section of 12' x 2'. This Allee will be generally adopted for the Trunk Road. The soil is very favorable for road-making, and if the trench be always kept on the upper side of the road a catch-water drain, a general average of two feet will be sufficient raising. Timber is abundant for fuel, and the Meekir Hills will certainly provide road metal, if not building stone. This part of the country is but thinly populated as far as native inhabitants are concerned, but the wooded slopes of the Meekir Hills seem to have found favor with Tea-planters, whose gardens lie along the neglected jungle road which forms the obviously insufficient means of communication between the homes of these European settlers. It may have been observed that with this Section Central Assam is supposed to commence, and such it is, a tract of country remarkable for beauty of scenery even in a Province so generally favored by nature as the Valley of the Berhampooter.

On the whole this portion of the line, though hitherto more than usually neglected, has the advantages for road-making, of a straight line and fair general elevation, together with the possession of good stone for building and metalling; but owing to its intersection by numerous nullahs the amount of bridges required will be large. The Diphloo, Dering, and Koberah streams requiring bridges of 60 feet. For nine others spans of from 15' to 35' will be requisite and 67 culverts.

The first portion of this Section lies through

Section V. flense jungle; the inhabi-

tants however of which, Baguree to Bor Allee Village, despite their seclusion, are sufficiently aware of the advantages of traffic to desire that a hut or market may be established in the Village of Baguree. Cotton in considerable quantities is brought down from the hills by the Meekirs. As we pass on, the line rises to a higher plateau and follows the water-shed line until reaching the Katoree levels, where a good many streams exist, which are liable to overflow in the rains; of these the Daopanes is the largest and most difficult during flood. A little further on huge granite boulders form a curious feature in the scenery. The line thence continues, through jungle still, over the Diphloo River and sundry smaller streams till a difficulty swamp is reached, which at present forms a nearly unsurmountable barrier to the traveller. It is about 280 feet across, but there is a narrower place where a bridge of 60 x 20 would probably suffice. A succession of small nullahs now ensues averaging from 10 to 12 feet. At Rangloghur is a curious old Assamese embankment. We here enter the fertile tracts in the neighbourhood of Koliabur, rich in magnificent crops of rice, sugarcane, tobacco, mustard seed, &c., shewing what cultivation can do for the naturally luxuriant soil of Assam. The Kullung River comes first under notice, the road following its banks so closely as greatly to endanger it. Villages succeed each other rapidly along this bank, but owing to the abovementioned incursions of the river it will be necessary to carry the Trunk Road to the back of these villages. This will have the advantage of cutting off large angles formed by the present road following every curve of the Kullung, and the still greater one of forming a bend to save the levels behind the villages from inundation by that river. To prevent the Kullung, in the first instance, from rising so high as to flood the villages, the present road must be raised two feet as a bund only. The altered road will require three bridges of about 15' = 15'.

The entire number of bridges required in this Section are two of twenty openings of 60 feet each, one of 60 feet, seven of from 20 to 30 feet, and 52 culverts.

Immediately after passing Bor Allee Village

Section VI. AND VII. the Meesah River obstructs  
Bor Allee Village to all ordinary traffic. It drains  
Nowgong and the mouth all the low country between  
of the Kullung. Koliabur and the Meekir

Hills, and though not broad is very deep. A wrought iron girder bridge of 60 feet is provided for it. Two miles farther on is the Deejee River of exactly the same character, but of greater size; a bridge of 60 feet is provided. The banks are of hard concrete.

From this point to Nowgong Station, a distance of eighteen miles, not a single stream enters the Kullung, two drains near Ollummergooree being the only openings required.

As hitherto the road continues to follow the left bank of the Kullung, and for eight or ten miles, before arriving at Nowgong Station, passes along a fine broad avenue of noble trees, lined with habitations and gardens on the inner side or that opposite the river. The scene reminds one of the approach to Hooghly. Unfortunately the old danger of the road being destroyed by the river exists here in full force and will necessitate the taking further back of the Trunk Road; but the present opportunity has not been lost sight of for repairing the old road, so as to form a better bund and prevent the water getting between it and the Trunk Road, which would flood the houses and gardens. After reaching Nowgong by the left bank of the Kullung as already mentioned, the road crosses the river re-crossing twenty

	Width.
Bareah ...	120 feet.
Kopales ...	280 "
Karpamee ...	125 "
Schoren ...	70 "
Bhokpanee ...	60 "
Gobah ...	150 "
Diboo ...	250 "
No. of feet of waterway ...	<u>1,116</u>

miles further down. I was anxious, however, to continue on the left bank without crossing, and therefore examined the Kullung down to its mouth, a distance of seventy miles, but found that such a course would entail the crossing of seven rivers as per margin, requiring bridges of considerable span and a large number of smaller bridges and drains.

Finding that there was an excellent site for bridging the Kullung between two hills within a few miles of its debouchure into the Berhampooter, I examined a direct line from this spot back towards Nowgong, and under the sea of heavy grass which covered the country found an old Assamese "Allee" running partly in the required direction. Being unable, from the lateness of the season and the greatest extent of survey yet before me, to proceed back to Nowgong, I left the matter in the hands of Lieutenant Nutball and Assistant Overseer Gorman, and the result is even more favorable than I expected.

I therefore propose to cross the Kullung opposite the Station of Nowgong, (where a bridge would prove more useful to the public than farther down,) then hug the high ground on the right bank of the river for twenty miles, encountering few drains, and passing through a succession of villages, then strike off nearly direct to where the Kullung passes between the hills above adverted to, crossing some low ground, where for 3,000

yards from twelve to sixteen feet of raising will be required and an outlet of 120 feet. By this the river crossing will be reduced to three miles saved in distance.

The embankment for the roadway will, as I have said, be at places heavy, but it will be valuable as a protection from the overflow of the Kullung.

The Kullung bridge near its debouchure will have a centre span of 200 feet with two sides of sixty feet each. It will be well raised above ordinary level so as not to interfere with the navigation of the river. The Estimate for such a bridge is — — —. The bed of the river for half the way across is of rock and the remainder of stiff clay: good building stone is on the spot.

The dry weather depth of water in centre of

river is 38 feet. The depth when in flood is 64-18 feet.

The greatest length of pile will be 60 feet, which will give 10 feet for sinking in bed, and 19 feet above high water mark.

It must be clearly understood that without this bridge over the Kullung, the line I have selected between Nowgong and Gowhatta cannot be adopted, as this river would prove an insuperable barrier to easy communication. A ferry would be most inconvenient and the stream is too deep for a bridge-of-boats. But the substitution of any other line would, from the enhanced distance and number of streams, greatly exceed the cost of the selected line, inclusive of the bridge. Moreover, by this line we avoid the Ghats which occur on the old pathway within twelve miles of Gowhatta. The run in from the bridge to Gowhatta will be nearly level, and will adopt for some distance an old embankment of the Assamese.

As above stated the line from the Kullung to Gowhatta presents no difficulty. A bridge fitted Kullung River to Gowhatta with regulating doors over the Bundajan to prevent the flooding of the country and a few culverts being all that is required.

In the Station of Gowhatta a similar bridge over the Bhoroloo, to prevent the flooding of the low lands at the back of the Station, and another over the Kullung Nuddee at Pulasharee, are all that is required in this Section.

Eight miles of road and a bridge of 55 feet span over the Khanajan have already been completed, or are in process of completion under former Estimate.

For several miles in the neighbourhood of Pulasharee the line follows the high bank of the Berhampooter, but sufficiently retired for safety, and to obviate the destruction of the numerous villages which line the bank of the river. It then passes off to the foot of the outlying spurs of the Garrow Hills, being unable further to follow the river bank, which soon after sinks into a succession of sand banks extending to Naggerberah near Gosparah, over which the Berhampooter rolls during floods.

In crossing from the river banks to the higher ground under the Garrow Hills a difficult river, the Koolsee, is met. It is chiefly difficult from the shallowness of its bed rendering it liable to shift and divide into several channels. The exact spot for crossing this river must be left until I can examine it in flood, but in the meanwhile I have provided for bridges over two channels, which it seems inclined to abide by. No other bridges and but few culverts are required until the foot of the hills is reached, as the country is a dead flat; and although the earthwork will be heavy, it will be invaluable as a band to the inundation of the Berhampooter.

The road will not ascend any of the Garrow Hills, but be carried from spur to spur crossing the numerous torrents which flow from them after they have united in a few considerable streams. From spur to spur the earthwork will be rather heavy, but here again in many places it will protect the country from the inundations of the Berhampooter. The Singrai River is crossed in two channels, the eastward requiring a bridge of

two openings of 60 feet each, the westward one span of 60 feet. Nine other bridges of from 50 to 20 feet span are required and fourteen culverts. Granite is available all along the line at a moderate distance.

Great difficulties was at first experienced in examining and determining

**Section X.**  
Chokobok to Salparah. the line throughout the last Section and the first portion of this. The result, however, was successful, for, whereas the present track crosses sixty-five streams, four of them varying from 120 to 300 feet in width, the selected line crosses only thirty-four, the largest of which requires merely a bridge of two openings of 60 feet each. There is also a saving of four miles in a distance of forty.

At Koontalbarce, the Goalparah District is entered after passing through a belt of high grass jungle three miles in width, and crossing the Daoseluk River the line enters the thickly populated Barmeroo Valley, and onwards through the large Villages of Amjongah, Khurrah, and Mundalgaon to Salparah. The chief difficulty is the Doodnog River flowing from Demrah under the Garrow Hills. The shallowness of its channel renders it liable to overflow, and I could find no spot where it is self-contained. I believe, however, that three openings of 60 feet each will suffice, with two culverts of 15 feet each on the inundated flats right and left of the river. Besides these six bridges of from 30 to 60 feet span, thirty-four culverts are required in this Section.

This Section is generally through high-lying ground here and there

**Section XI.**  
Salparah to Luckipore. covered with still forest. The line passes Goalparah about twelve miles to the right, to which place a branch road can easily be made. I attempted to take the line through a part of the Garrow Hills to cut off the long Agueeah Spur, but after trying many routes was obliged to give them up, as they proved too steep, and I have fixed on a line skirting the south of the Orpud Lake, and running through a defile east of Agueeah Village. The Krishnai and the Jinaree are two considerable rivers crossed in this Section, but they have fine deep Sections, and with relieving culverts right and left can be safely bridged with three openings of 60 feet each for the Krishnai, and two of the same span for the Jinaree. Towards the end of this Section heavy earthwork will be required on the Metchaparali Plain as it is liable to inundation.

In all, besides the rivers abovementioned, seven bridges of from 20 to 60 feet span and twenty-six culverts will be required in this Section.

This, like the latter part of the last Section, is

**Section XII.**  
Metchaparali to Berham-pooter opposite Dooberie. low and liable to inundation, interspersed by a number of bheels and old channels in which water has no current. I have allowed for 600 feet of waterway in the eleven miles and fill in all the old channels.

Waterway is provided by one bridge of three openings of 60 feet each, over the Garrab River, one of two openings of same dimensions over the Khanis, and four of one opening of 60 feet over other inundation channels.

At Ekenia Village the Berham-pooter is met with Dooberie lying on the farther side, and at this

point ends the exploration and survey of the Assam Trunk Road.

To sum up the results arrived at, the road will be about 355 miles in length. It is impossible to give the exact length of its course through swamp grass and forest.

The earthwork required is 361 millions of cubic feet, which will probably cost Rupees 10,84,609.

The area of waterway allowed is 143,435 square feet, which, with a mean velocity of four miles per hour, would suffice to pass the whole Berham-pooter.

To cross this waterway I have provided twenty-one wrought iron lattice bridges of from two to five bays of 60 feet each, at a probable cost of Rupees 3,88,349.

Fifty-eight similar bridges of single spans varying from 20 to 60 feet, at a probable cost of Rupees 2,64,900.

And two hundred and seventy masonry culverts from 4 to 15 feet wide, at a probable cost of Rupees 3,00,000.

Twenty-eight temporary Bungalows for shelter, will cost Rupees 8,400.

Eighty-five millions of superficial feet of jungle clearing is estimated to cost Rupees 83,300.

Thus the total cost of the road with bridges over every stream, excepting the Diheen and Dhunseroo, will probably be Rupees 21,29,558, or Rupees 6,000 per mile, and the work might be completed by the end of 1867 provided the necessary funds are forthcoming at required seasons.

In the Estimate I have been unable to provide any sum for compensation for land taken up for the work. If a fair arrangement can be made for the disposal of wastelands to be cleared of jungle on either side of the road, they should amply balance the amount of compensation due for cultivated lands encroached on by the road.

A sketch Map is annexed, showing the general direction of the road and a schedule of the work to be done in each Section.

A Map on a large scale and plans of bridges are being prepared.

D. BARROS, Major,  
GOWHATTY, } Supdt. of Works in Assam.  
The 5th May 1863. }

From MASON W. AGNEW, Officiating Commissioner of Assam, to MAJOR D. BARROS, Superintendent of Works in Assam.—(No. 2, dated the 6th May 1863.)

I HAVE the honor to acknowledge the receipt of your letter No. 5 of yesterday's date, sending, for my perusal and remarks, your report to Government on the Assam Trunk Road, which, I need scarcely say, I have read with very deep interest, anticipating, as I do, results of such vast importance to this long neglected country from the construction of the work in question.

2. I am not of course called upon, nor do I pretend to any acquirements that would for a moment warrant me to speak of your scheme in a professional point of view, but your report suggests some remarks that I may with propriety make. And first I would with great earnestness urge that, in considering the question coming before it, Government will keep prominently in view that at no very distant period this road will certainly be converted into a light Railway, and I would venture to hope, therefore, that the orders that may be passed will be framed accordingly, that is to

say, that sanction will be given for the construction of the line so far as may be possible in view to the object referred to. It will appear, I have little doubt, to some people that such an expectation as mine is very visionary; but no one acquainted with the extraordinarily rapid strides tea-planting has taken during the last half-a-dozen years can for an instant doubt that Assam is becoming one of the most important Provinces in India, and as such will imperatively demand for herself that great adjunct to prosperity in every part of the world—a Railway.

3. In regard to what you say about Bridges I most fully concur, endorsing your opinion to the fullest possible extent, that without them the finest road that could be constructed in Assam would be valueless, whereas their existence ensures at once to the people the means of inter-communication. And no less cordially do I agree with you in regard to having the line bridged by contract; in fact, on this point, in my opinion, hinges the question whether the work shall be a great success by being expeditiously completed, or a comparative failure owing to the inevitable delay that must take place if your Department, without it be put on a very different scale to what it now is, be called upon to undertake the bridging in addition to the earthwork and culverts.

4. On another point also I agree with you entirely, namely, that relating to our keeping in view a system of bunds in connection with District roads. In Upper Assam very many of the old roads seem to have been planned by the Rajahs with reference to this double object, and we should unquestionably, I think, follow their example in this respect. I had never travelled to Upper Assam by land until this year, when I marched from Gowhati to Dibroogurh via Jyproc, and I was certainly no less pleased than surprised to see the chain of works of the kind with which the country is intersected. A careful survey of these roads I would strongly recommend being made as you advise, and also that your suggestion be carried out of putting such of them as may be chosen for that purpose into thorough repair, and keeping them so. Many of them have not been cleared for years, while others have never been opened at all by our Officers, their very existence being unknown until some enterprising Tea Planter, as Mr. Beckett tells me has frequently occurred, stumble on them in his exploration of the jungle.

5. Referring to your suggestion about letting out the land rent-free at the sides of the road, with the view of attracting persons to cultivate it and thus keep it clear from jungle, I doubt if it be a practical one. It seems to me that such an offer would not serve to attract cultivators to unfrquented localities, and would only entail a loss of revenue by its advantages being claimed where the land would be cleared without holding out any such inducements.

6. One other point only remains for me to notice, and that it is the adoption of the Bar Allee as the Trunk Road. This I am most strongly in favor of, both on financial and political grounds; the two objects I have to address my attention to, Mr. Beckett has favored me with his opinion on the former point, and assures me that entire Mouzabs of the most valuable description of rice land will be re-claimed by the repair of this great bund road, and that there can be no question about it increasing the revenue of the District most materially. As regards the political advantages to be expected, I can only say that I believe

Government could not devise a more popular measure than by making the Bar Allee the imperial road of the Province, as it is a work all Assamese gentlemen are justly proud of, indicating, as it does, the wealth and power of their Rajahs, and the magnificence of their designs. The people of Upper Assam would unquestionably be extremely pleased to see this noble road restored, and I believe it is the only work we could undertake that would ensure their cordial assistance towards completion.

From COLONEL E. L. OMANNET, R. E., Offg. Secy. to the Govt. of Bengal, in the Public Works Dept., to the Secy. to the Govt. of India, Public Works Dept.—(No. 3128, dated the 6th June 1863.)

I AM directed by the Lieutenant-Governor to submit, for the consideration of the Government of India, the outline of a Project for the construction of a Trunk Road traversing the entire length of Assam.

2. The want of such a road has long been felt and the obligation of Government to provide it has been admitted; but the magnitude of the scheme, and the heavy outlay involved, coupled with the difficulties which Assam itself presents to the prosecution of public works, has hitherto deterred this Government from entering upon the undertaking.

3. The attention of the late Lieutenant-Governor was, however, more especially called to the subject by Major Hopkinson, the Commissioner of Assam, in October 1861. On this occasion His Honor admitted the importance and necessity of such a road, but Major Hopkinson was at the same time informed that, owing to the inadequacy of the funds available for public works in Bengal, no hope could be held out of any considerable sum being spared from the Budget of the next year for the work. It was, however, suggested that Major Hopkinson should ascertain the opinion of the Tea Planters in regard to the opening up of trunk lines of internal communication, and that, if strongly supported by the Planters, he should think fit to apply for an extra allotment of money; his application would be submitted to His Excellency the Governor General in Council, backed by the strongest recommendation which the Lieutenant-Governor could make.

4. On this the Tea Planters were invited to express their opinions, and meetings were held in nearly every District; the result was embodied in a Report submitted to Government by the Officiating Commissioner, Major Haughton, who was himself of opinion that a Trunk-Road would in every respect prove beneficial. Thereupon, the Superintendent of Works was requested, in November last, to submit a preliminary Report for the construction, or rather improvement of the existing road on the south bank of the Berham-pooter; this requisition has just been complied with, and I am desired to forward the Superintendent's Report,\* together with the Abstract of

the approximate expenditure and the Sketch, "for submission to the Government of India."

5. Major Briggs' Report very clearly and fully describes the scheme which embraces the construction of an unmetalled road from Dubaree, in the Goalparah District, or near the western extremity of the Province to Dibroogurh near its eastern extremity, a distance of about 355 miles.

\* No. 43, dated the 8th May 1863.

The road is to be twenty-four feet wide and about two feet above highest flood level, it is to have slopes of two to one, and the gradients have been regulated to admit of the conversion of the road at any future time into a light Railway (in which the Commissioner considers probable at no distant date.) The road is to be bridged throughout, (except at two of the streams in Upper Assam, *e.g.* the Diheen and the Dhuasur,) the larger streams with iron girders resting on masonry abutments. In Upper Assam the road will, for a part of the way, follow the line of the "Bar Allee," or Great Road constructed by the Rajahs of Assam, of which the natives are justly proud. Provision has also been made for the erection of Inspection Bungalows at every twelve miles, and for the clearance of jungle on both sides of the road. The construction of the road will, it is stated, take five working seasons, or, if commenced next season, would be completed by the end of 1867.

The cost of the work is estimated by Major Briggs as follows:—

36,10,00,000 cubic feet of earth-work, at Rs. 3 per 1,000 feet	Rs. 10,84,600
2,048 running feet of waterway in culverts	" 3,00,000
1,415 of ditto in bridges from 20 to 50 feet span, at Rs. 113 per foot	" 1,50,900
4,080 of ditto in ditto of 60 feet span, at 120 Rs. per foot	" 4,93,340
8,30,00,000 superficial feet of jungle clearing, at 1 Re. per 1,000 feet	" 83,000
28 Inspection Bungalows, at Rs. 300 each	" 8,400
Total Rs.	21,29,258

or for 355 miles nearly Rupees 6,000 per mile exclusive of Establishment. This amount does not include the expenditure which has recently been incurred under the sanction of the Lieutenant-Governor on the improvement of the main roads near the principal Stations, nor the outlay on the construction of certain small bridges which have been in progress for some years past between Seesangor and Dibroogur.

6. Considering the difficulties of carrying out work in Assam, and the heavy preliminary expenses to be incurred in importing laborers and workmen into the Province, the sickness amongst them, and the loss that must be expected, the Lieutenant-Governor is of opinion that it will be advisable to anticipate a much larger expenditure on the work if carried out than is estimated for by Major Briggs. His Honor considers that if the scheme is to be carried out Government should be prepared to meet an expenditure of not less than 40 lakhs of Rupees. The following may be taken as the lowest safe estimate of the outlay involved:—

3,810 lakhs of cubic feet of Earth-work, at Rs. 600 per lakh	Rs. 18,05,000
2,048 running feet of culverts, at Rs. 125 per foot	" 2,56,000
1,415 running feet of bridges, not exceeding 50 feet span, at Rs. 180 per foot	" 2,54,700
4,080 running feet of bridges of 60 feet span, at Rs. 320 per foot	" 8,97,600

830 lakhs of superficial feet of jungle clearing, at Rs. 150 per lakh	Rs. 1,24,500
28 Inspection Bungalows and Shelter for Establishment	" 28,000
Total for Works	Rs. 33,03,800
Establishment at 15 per cent	" 5,11,095

Total, Rs. ... 38,70,895.

or say, including the expenditure already incurred 40 lakhs, which is at the rate of Rupees 11,250 per mile, including all charges; this would require an appropriation of about three lakhs of Rupees during the current year, and about seven lakhs of Rupees per annum for the next five years, to complete the road by the year 1868.

7. The Superintendent of Works has pointed to the possibility of some of the Railway Contractors coming forward to undertake the work if it were determined to have the road constructed by contract. Considering the magnitude of the scheme, the difficulty of obtaining labor in Assam and transporting materials, and the want in the Department of a proper working Establishment for such an undertaking, the Lieutenant-Governor considers that it would be advisable to employ such an agency if a Contractor could be found who would execute the work for a reasonable sum.

8. In strongly recommending this project for the Assam Trunk Road to the favorable consideration of the Government of India, the Lieutenant-Governor desires to refer to the correspondence noted on the margin, in

To Government of India, Public Works Department, No. 15-8, dated 9th April 1861.  
To Ditto, No. 3092, dated 8th July 1861.  
From Ditto, No. 2770, dated 2nd August 1861.  
From Ditto, No. 4300, dated 4th December 1861.

which the claims of Assam to be provided with proper road communications and to receive a larger share of Imperial Funds for its Public Works have already been urged.

9. Assam comprises an area of 34,345 square miles and has a population of nearly 13,00,000 inhabitants, for whose wants and for so large a tract of country scarcely any means of land communication have as yet been provided. Hitherto the Province has been in a very backward and unsatisfactory condition, little was known regarding it, and no larger sum of public money was expended on it than was actually needed for carrying on the existing administration.

10. Of late years, however, the attention of British capitalists has been attracted to the Province as a field for the cultivation of tea on an extensive scale, and already Assam tea bids fair to become one of the staple exports of Bengal. This has created a demand on the Government for improved means of communication, which the Lieutenant-Governor has endeavored to meet to the utmost extent of the limited means at his command, having due regard to the wants of other parts of the country.

11. Measures have been adopted for rendering Assam more easily accessible from Calcutta, and work has already been commenced on a portion of what will, it is hoped, be hereafter the Imperial Highway to the Province from the terminus of the Eastern Bengal Railway at Koochtee. Steps have also been taken for improving the internal local land communications of Assam

but the chief desideratum is a highway connecting all the Districts of the Province with each other. Such a road is one of the most obvious means for accelerating the progress of the country, and the work would give a vigorous impulse to trade and public enterprise. It would tend to enhance the price of waste lands, and, as the land, except in the District of Goalparah, is not permanently settled, to increase the land revenue; indeed it is confidently anticipated that the immediate increase of land revenue alone consequent on the construction of the road would more than pay the interest of the estimated outlay of 40 lakhs. On the whole, the Lieutenant-Governor is of opinion that the commercial and political advantages of this first step towards opening up the fine valley of the Berhampooter are beyond all calculation.

2. Under all the circumstances mentioned, the Lieutenant-Governor solicits the general approval of the Government of India to the project now submitted, and that a special grant of three lakhs of Rupees be allotted for this road during the current year. If this be accorded, the Lieutenant-Governor will be prepared to submit a definite scheme for supplying an Establishment for the detailed Surveys and Estimates required, and for the despatch of coolies and workmen to commence the earthwork in those portions of the road for which detailed Estimates may be available.

From LIEUTENANT-COLONEL J. P. BRADLEY, R. E., Official Secretary to the Government of India, Public Works Department,—(No. 466, dated the 30th January 1864.)

Ordered, that the following Resolution be communicated to the Government of Bengal, and that the commendations of the Government of India be given to Major Briggs for his carefully prepared reports, and that the preparation of detailed Estimates, with survey and sections, and all the information required to establish the extent of raising and waterway wanted for the several sections of these two roads should be urged upon the Public Works Department in Assam, which should be assisted with Establishments to enable it to meet the demand made.

#### PROCEEDINGS OF THE GOVERNOR-GENERAL OF INDIA IN COUNCIL.

##### *Assam Roads.*

Read again—

Bengal Government's No. 3413, dated 10th June 1863, with report and appendices from the Superintendent of Assam.

Bengal Government's No. 3428, dated 6th June 1863, with report and appendices from the Superintendent of Assam.

Bengal Government's No. 4884, dated 24th August 1863.

Bengal Government's No. 5892, dated 9th October 1863.

Bengal Government's No. 5981, dated 14th October 1863.

*Observations.*—The first two letters submit interesting reports by Major D. Briggs, Superintendent of Public Works in Assam, giving information respecting two Trunk lines projected for construction in that Province; one, a longitudinal Trunk line, following the River Berhampooter; the other, a cross line from the Sylhet River at Chattuck, the great Lime Port, by Shillong, the Hill Station of Assam, to Gowhatta, the chief Station of Assam on the Berhampooter.

2. These reports are so interesting, and contain so much useful information, that they may be published with advantage for general information.

3. The last two letters report the works put in hand during the current year on both these lines of road. The Assam Trunk Road between Dibrooghour and Golah Ghāt, a distance of 107 miles, is to be completely bridged for all the smaller water-courses according to a revised Estimate.—

The completion of bridges between Dibrooghour and Seelsaugor, 4½ miles, costing	Rs. 5,000
The completion of bridges between Seelsaugor and Golah Ghāt, 6½ miles	45,000
And the construction of a Branch Road from Dibrooghour to Dibroomukh	30,000

making a total of Rupees 80,000, for which provision was made in item No. 163 of Budget Estimate of 1863-64.

4. The bridging of the above portions of the Trunk Road, was first brought forward in an Estimate prepared in 1854, but the work was not sanctioned till 1856-57, and, owing to the general suspension of progress which followed on the occurrences of that year, only two bridges were built up to March 1860; on the 1st October 1863 eight bridges had been completed, eight were nearly completed, two were in progress, and one bridge had to be commenced; these 19 smaller bridges completed, there will still remain between Dibrooghour and Seelsaugor five large bridges to be constructed over more important water-courses.

5. The number of small bridges required between Seelsaugor and Golah Ghāt are forty-nine, and when these are constructed, there will remain eighteen bridges to be built over the larger streams. It is proposed to construct the large bridges with iron girder tops, and a longitudinal section of the road between Dibrooghour and Golah Ghāt is being prepared with the high flood line marked throughout, and accompanied with accurate sections of the water-courses and calculations of waterway required.

6. In respect to the cross road from Sylhet to Gowhatta, *via* Shillong, the easy portion between Gowhatta and Shillong has been authorised to be opened at a cost of Rupees 35,000 for the 70 miles, being at the rate of Rupees 500 a mile, the road being in the first instance made 10 feet wide with a gradient not exceeding 1' in 25'; the jungle is to be cleared for 50 feet on either side, and strong timber bridges are to be constructed over the water-courses.

7. The remainder of the road from Shillong to the Sylhet Plains is also to be opened, but only as a bridle path, and at a cost not exceeding Rupees 5,000, making the whole expenditure authorised Rupees 40,000.

*Resolution.*—The Government of India, fully recognising the importance of improving the communications in Assam, and approving of the formation of the river Trunk line, and of the cross road as proposed by the Superintendent of Works in Assam, and recommended by His Honor the Lieutenant-Governor of Bengal, confirms, the authorization of work during this year within the limits which have been stated.

2. Assistant Engineers have been placed at the disposal of the Bengal Government to assist

in taking the sections necessary to enable the Executive Engineers concerned to prepare reliable Estimates of the whole expense of these large undertakings, and the Government of India will be prepared to dispose of these, section by section, to prevent the progress of work, where the Estimates have been carefully framed, being retarded, which must inevitably be the case if the whole project were to be waited for. The roads are to have a width of 24 feet with 21 feet between the parapets of the smaller bridges, and 16 feet for the larger works. The Hill Road, where it is in rock, being restricted to a width of 20 feet, within which are to be formed the inner side drain and the outer parapet wall.

3. The Government of India will endeavor to supply the funds required to carry on these two roads as rapidly as may be consistent with economy in construction; but, in applying for any special grants, the Government of Bengal must shew the actual means which exist for making the expected progress within the year, and that the bridges and the section of road will be completed together, so that the expenditure will not in any case be idly employed but lead directly to useful results.

4. The Government of India concurs in opinion with the Government of Bengal that both these roads are works of great importance and that they should be completed at the earliest practicable date.

From LIEUTENANT-COLONEL J. P. BRADLEY, R.E., Secretary to the Government of Bengal, in the Public Works Department, to the Superintendent of Works in Assam.—(No. 1011, dated the 20th February 1861.)

Your Reports noted on the margin, on the subject of the two main lines of communication required for the Province of Assam, the one a great highway traversing the entire length of the valley, and the other a cross road to connect Chhattuck,

<sup>a</sup> No. 800, dated 9th December 1862.  
No. 43, dated 8th May 1863.  
No. 902, dated 1st October 1863, paragraphs 4 to 6.

in Sylhet, on the Soormah River, with Gowhatta, the chief Station in Assam, and passing over the high lands of Shillong and Yeodo, were submitted in due course to the Government of India, in the Public Works Department, and I am instructed to forward, for your information, a copy of the Proceedings of His Excellency the Governor-General in Council, No. 465, dated the 30th ultimo, acknowledging and passing orders on the references made by the Government of Bengal.

2. The Lieutenant-Governor has read with satisfaction the favorable notice of your Reports expressed by the Government of India, in which he entirely agrees, and His Honor is glad that the care, labor, and ability shewn in the preparation of these sketch projects should have been thus recognized.

3. The projects generally have been approved of, and the works ordered for execution during this year will probably be sufficient to occupy the Executives until the surveys and detailed Estimates can be submitted; and you will observe that to facilitate the ordering of work the Estimate may be submitted in sections.

The following Sub-Divisions should be those first prepared :—

- Dibrooghour to Seelsangor;
- Gowhatta to Nowgong;
- Gowhatta to Chygong;
- as before ordered.

4. Now that these two great roads have been sanctioned as a whole, and that special grants have been promised to provide for their construction and completion at the earliest practicable date, I am to state that the Hon'ble the Lieutenant-Governor is desirous of affording you all the assistance that can reasonably be required for the accomplishment of the work. I am therefore to call upon you to state definitely what arrangements you would propose to make to carry into effect the views of the Government of India.

5. The Lieutenant-Governor is disposed to agree with you that it would probably be a mistake to approach the Valley of Assam by Rungpore and Doober, or even by Bingwa; and that the best route for connecting Calcutta with Assam would be by a line of road from a point on the Berhampooter, opposite to Serajunge, and then through the District of Mymensingh crossing the old Berhampooter near Jumalpore, and thence skirting the base of the Garow Hills along the bank of the river. I am to request that you will adopt measures for making a preliminary report on this line with a view to the southward extension hereafter of the great Trunk Road of Assam, now sanctioned by the Government of India, with a short branch line, if necessary, to touch the river opposite Lugwa.

Extract from a letter from Major D. Barnes, Superintendent of Works in Assam, to the Chief Engineer Bengal.—(No. 1702, dated the 18th February 1861.)

2. I HAVE now finally fixed, to the best of my ability, the entire line of hill road from Gowhatta to the Sylhet Plain, and when I say that this has been only done after a series of explorations extending over more than a twelve month, and after the failure of many trial lines of levels, it must be allowed that the best means have been taken to ensure the selection of the best attainable line.

3. The country lying between Gowhatta and the main axis of the Cossyab Hills, of which Shillong is the crowning height, was only known to Europeans along the Nunklow hill-path, and this was held in so bad repute from its unhealthiness, that those who ventured the journey along it did so as fast as the means at their command permitted, and considered themselves fortunate if they escaped the malarious fever which, undoubtedly, pervaded it at almost all seasons of the year. This route was wholly unadaptable to a line of road with gradients not exceeding 1 foot in 25.

4. Another route to the eastward was known to a few Officers, and was recommended in 1862 for adoption as the future hill road between Gowhatta and Shillong. But I found it generally so deeply embedded in swamps and low bottoms that for this and other reasons given in my Letter No. 749 of the 20th November 1862, I strongly declared against its adoption.

5. It seemed to me that as both of these routes were intersected by streams flowing in opposite directions from a range of hills lying between them, and that as this range abutted on the plain close to Gowhatta, I should in all probability find that a line of road might be taken close to its water-shed, which would ensure a higher and healthier route, the absence of all large rivers, and, probably afford a natural inclined plane sloping upwards to the great elevated plateau of the Cossyab Hills. It will be seen that in these qualities my surmises were found to be generally correct.

6. Although I have spoken of a range of hills lying between the two routes, it must not be supposed that this is a peculiar feature in the aspect of the country. So far from it, the whole of the space between the Coonyah Hills, properly so called, and the Valley of Lower Assam, is crowded with a mass of rounded hills apparently detached, but in reality (following the almost invariable law of physical geography) joined by low and narrow passes. The tops of these hills vary from 1,500 to 3,500 feet above the sea level, and their connecting links or passes which become obligatory points to a road taken in the direction of the axis of any one of them vary from 1,800 to 3,000 feet, the height increasing as the axis near the mass of mountains from which it has been thrown off.

7. The appearance of these hills when viewed from the superior range of the Cossyahs is like a tumultuous but unbroken sea, no wave rising above one normal level, but no portion absolutely smooth. Where the general elevation is below 2,500 feet, the hills are covered with dense bamboo and tall grass jungle. The Sôl, Jamoon, Guimree, and Senuel are the common forest trees. Above that elevation bamboo generally ceases, and, except in the bottoms, the grass is of moderate height, and a Pine very similar to the Scotch Fur becomes the ordinary forest tree. Above 3,000 feet Oak becomes common. I am inclined to associate the fever level with that of the Pine.

8. These hills, with an exceptional wall of cliffs, or granite crag exposed by the action of water at their base, are well covered with soil, generally of a rich red quality of that kind favorable, I believe, to the growth of Tea. This depth of soil presents to the Engineer fewer natural obstacles than are generally met with in the construction of hill roads. It is also of a nature which promises to preserve its form when the section of a road 24 feet is cut from the hill side.

9. Throughout this undulating mass of hills there are but few villages. Five and six miles may be passed without the traveller seeing one, yet at almost every mile there are vestiges of former habitations deserted, it is said, in consequence of the ravages of wild elephants. The crops of hill rice, pulse, and cotton, which are here and there met with, are all fine in quality, and the specimens of the latter were the heaviest bolls I have seen in Bengal. Unlike the distinctiveness of race and language which characterise the peoples of the mountains shutting out the Valley of Assam from the south, the population of these lower hills is of a mixture of tribes. The Garrow, Meekir, Cacharee, and Cossyah are found here all living together, and although not so powerfully made as the true Cossyah, yet the mixed race is a fine one and marvellously superior to the lazy and effeminate people of Assam. They are quiet, good-natured, fond of home, and far more temperate than the inhabitants of the higher hills. They are great woodsmen, using the "dhou" with admirable facility, but are destitute of the means of waging war against the wild animals from which they suffer. As a rule, they have neither guns nor bows, and the art of snaring or trapping, so well understood by neighbouring tribes, is to them almost unknown. This is the more curious, that they are great admirers of flesh, and are quite without prejudice as to the kind, quality, or condition. A morsel of an elephant found dead on their hills, or a succulent puppy bought at the Bengullee "hatho," are equally prized delicacies.

10. By the true Cossyahs of the upper hills they are called "Meekir Cossyahs," and both they and their country are viewed with fear and horror by them, yet a large part of the country owns fealty to the Cossyah Hill Chiefs; one portion belongs to the Rajah of Nanklow, another to the Rajah of Moleem. Further eastward Jynteah takes in a considerable portion.

11. It is during the rains that the wild elephants passing out of the inundated low lands of Assam become most troublesome. The young shoots of the bamboo afford them attractive food, and the elevation is sufficient to free them of a large proportion of the mosquitoes and sand flies with which Assam swamps abound. The "Meekir Cossyahs" say the elephants are attracted by their maize and rice, but this must be attributed, I think, to an innocent vanity on their part, which supposes that the lordly beast would leave the richly cultivated plains of Assam to rob the little terraced fields of the hillman.

12. To the road they have not been found destructive to any extent, and, as our clearings on either side increase, it is believed they will avoid coming near the road at all, and that the lands in its neighbourhood, formerly deserted, will again be brought into cultivation.

13. I have said that the people of these hills are a fine strong race. Their general appearance does not denote the prevalence of those fevers from which the people of Assam suffer so much. It is said that this immunity from fever is the result of their drinking spirituous liquors, and if so, they are entitled to the credit of knowing how to use such without abusing them, for I have never seen men drunk as one so often does in a Cossyah village.

That the high lines selected for the road is eminently healthier than the old road we have the best of proof. Since last March Lieutenant Nuthall, the Executive Engineer, Lower Assam Division; Lieutenant Tomkins, R. E., Assistant Engineer, and myself have, each of us at different times, been out during portions of almost every month without suffering from illness. Two or three of our servants got fever, and three or four Hindoostances, employed as gaugers, had to leave one of them dying in Hospital; but they were new men to Assam, and would have got fever anywhere under exposure. In March Lieutenant Nuthall was out for several days. In the end of April he and I were out for ten days, living in huts, when exploring and fixing the line. In May Lieutenant Nuthall was again out for fourteen days. In September he and Lieutenant Tomkins were out for ten days, and since November the latter Officer has resided entirely on the line of road.

My own impression is that when the "jungle on either side is well cleared for a distance of 100 feet it will be perfectly safe for troops or travellers at any season of the year. The highest marking of the thermometer in the shade the time I was out in April was 84°.

14. Having dwelt somewhat at length on the description of the country between Gowhatta and the Cossyah Hills Proper, because it is a region hitherto unknown to Europeans, I will not give a separate description of the well known ground of the Cossyah range, but merely notice such parts as affect the line of road when describing its course with reference to map and section. I will, in its proper place, explain the

reasons which induced me to take the line down to the Sylhet Valley in the direction of that Station rather than towards Chattuck, which at first appeared to me the proper course.

15. Attached is a section of the entire line of road from the Berhampooter at Gowhatta to the Soornih at Sylhet. The heights were taken by Aneroid Barometer compared with the standard in Surveyor-General's Office in Calcutta; and the distances, partly by actual measurement and partly by computation of the length of base, corresponding to the observed difference of height proceeding at a known gradient. In many places the jungle was so dense that the line could not have been measured without a clearing being first effected, and that would have delayed me far longer than my other duties could permit. A map on a scale of four inches to the mile shewing this line of road and all new roads being constructed or surveyed within the Circle is now under preparation and will be forwarded when ready. In the meanwhile the Cossyah and Jynteah Hill map will serve the purpose of this Report.

16. From the section it will be seen that after passing through six and a half miles of the Assam Plains to the south of Gowhatta the line ascends 950 feet, at a gradient of one foot in twenty-five for four and a half miles, with a level break of half a mile.

The line then descends 250 feet to the Gorbungah Valley, which lies between the last high Gowhatta, 12 miles. Station and the Kukra Seel Pass. This descent is easily effected at a gradient of one foot in forty. But when the ultimate point to be reached was still upwards this descent is, of course, contrary to the true principles on which hill roads should be laid out, as the Engineer has no right to impose on the public the double ascent of so many hundred feet. The choice lay between winding for six miles up and down a lateral valley, or introducing the easy gradient of one in forty for a mile and a half down and a mile and a half up to the Kukra Seel Pass, and the latter course was preferred. For the same reason the abnormal descents at the 22nd mile, the 36th mile, and the 49th mile, became necessary to avoid an increase of distance of some eighteen miles.

17. After a short descent at one in thirty-three from the Kukra Seel Gowhatta, 15 miles. Pass the line proceeds at a very easy gradient through long flat valleys to the Oomur Nuddeo. On either side are hills covered with the unrivalled forest growth of Assam, and here it is that the soil is of so excellent a quality for the growth of Tea. The line crosses several small streams, tributaries of the Oomur, which is crossed at a spot Gowhatta, 22 miles. easily bridged, where its

crystal stream dashes over a ledge of rocks, and this site has been selected for the first Inspection Bungalow. The valley is well stocked with magnificent Sil trees, and being at a general elevation of more than a thousand feet is always comparatively cool.

18. Between the Oomur and the Amtenah streams a rise of 150 feet at one foot in thirty-three, and a corresponding descent is necessary to cross a small intervening range on which cotton and hill rice are cultivated. The Amtenah will require a bridge of seventy feet span, the largest

on the whole line of road until the Sylhet Plain is reached.

From the Amtenah the line re-enters the water-shed by ascending for three Gowhatta, 28 miles. miles, at a gradient of one in thirty-three, to the obligatory Pass above Punkir Village. It passes through rich red soil covered with forest presenting no difficulties. Here it meets the head of a long flat valley which extends down to the old Nunklow road near Nowgong, and which some twenty years ago was covered with cultivation. The annoyance the villagers met with from wild elephants caused its abandonment; but now, in consequence of the large clearings the road will require, its re-cultivation is confidently looked for. Crossing the head of this valley to a series of obligatory points on the water-shed line it passes along them at easy gradients and level spaces until it strikes

Gowhatta, 40 miles. the Oomur River near its source close to the Village of Palliar. Here, at 2,200 feet above the sea level, the first pines are met with, and from this the natural growth changes from dense bamboo jungle and lofty grass to comparatively low grass, and an entire absence of bamboo and other plants characteristic of the Assam jungles. Two miles beyond Palliar, at an elevation of 2,500 feet, we are building the second Inspection Bungalow from Gowhatta, and I believe the spot will prove

Gowhatta, 42 miles. generally healthy and above the limit of the fever stratum. Four miles further on the line rises to 3,000 feet, where we should have preferred to build the Bungalow, but that there is no village near and distance from the last Bungalow on the Oomur would have been too great.

19. Having reached 3,000 feet we are obliged to descend at one foot in sixty and one in a hundred to the next obligatory point on the water-shed, (elevation 2,772,) from which we run up easily to the crossing of the Putran stream, the eastern tributary of the great Borpanee River which flows under Nunklow. It will require a bridge of sixty-five feet. The descent is through beautiful glades, bounded by grassy knolls, on which magnificent red barked pine trees cluster in groups, more pleasing to the eye than art could ever have devised. If this mass of swelling uplands proves as healthy as the appearance of the few inhabitants promises, and as my native predilections in favor of the healthful atmosphere of the pine suggests, another wide field in the waste garden of Assam lies ready to re-pay the industry of the English settler.

20. The ascent from the Putran stream to the Gowhatta, 64 miles. first terrace of the Cossyah Hills Proper forms the longest incline on the road at a gradient nearly approaching four feet in one hundred, which Government was pleased to fix at my suggestion as the maximum. The incline varies from one in thirty-three to one in twenty-five, and is twelve miles in length. To have eased the gradient would have added to the length of the road, which I thought objectionable. These twelve miles lie through a magnificent forest of pines, many of which attain great size. Although there are some still rocky banks to be cut into for the full section of the road yet, except at one spot, there is no continuous line of cliffs. The exception is where the line cuts a wall of granite about